THE NEWSWEEKLY FOR THE COMPUTER COMMUNITY
August 17, 1987 · Vol. XXI · No. 33 · $2/Copy · $44/Year

COMPUTERWORLD

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IBM squeezing front-end market

SNA drive boon for software vendors, tough on network processor rivals

BY ELISABETH HORWITT
CW STAFF

IBM's accelerated drive toward a fully functional distributed Systems Network Architecture communications system is likely to limit MIS managers' choice of SNA front-end processor vendors but broaden offerings from third-party SNA software retailers.

Companies such as Communications Solutions, Inc. and Cincom Systems, Inc. have already started bringing out new SNA connectivity tools and applications designed to ease users' passage to the new distributed environment.

However, several third-party communications processor vendors contacted recently by *Computerworld* appeared to be having trouble keeping up with IBM's rapid stream of updates to its front-end processor architecture while maintaining their products' added value.

This has discouraged some MIS managers from looking outside of IBM's domain for their communications hardware.

Support woes

Support for IBM's Network Control Program is one stumbling block. "We've looked at the possibility of buying our front-end processors from NCR Comten, but they don't maintain current NCP support," said Dan Schultz, manager of network support at the Columbus, Ohio, banking consortium Banc One Corp. "The way we are growing, we want to get IBM's new Network Control Program features as soon as they appear," he added.

Two such capabilities recently promised by IBM are dynamic reconfiguration and front-end processor support of IBM's PU2.1 peer-to-peer communications. "This will mean major functionality that people like NCR Comten have got to get for their own products," said David Passmore, a principal at Fairfax, Va., research firm Network Strategies, Inc.

"NCR Comten has to come up with IBM's functions and features plus its own added value," Passmore said. "That's a dangerous game, because if it gets ahead of IBM, it will have to backtrack when IBM introduces similar capabilities."

Unisys Corp. and Control Data Corp., which recently entered the SNA communications processor market, are also playing catch-up with IBM's NCP enhancements, Passmore said.

Amdahl Corp., whose front-end processors were designed to run IBM software unchanged, does not have the problem of

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Tymnet takes low cost tack

BY KATHY CHIN LEONG
CW STAFF

SAN JOSE, Calif. — Seeking to capture the low end of the packet-switching arena, Tymnet, McDonnell Douglas Network Systems Co. last week said it will deliver its most inexpensive packet switch to date that is designed for large corporate office branches and small and medium-size companies.

Dubbed the MD 7408, the $8,000 switch signals a growing trend in the marketplace toward smaller packet switches, according to analysts. The switch is slated for limited delivery in January and for general availability by next April.

"The products are definitely coming down in price and size," said Victoria Marney-Petix, an analyst at Dataquest, Inc. in San Jose. "There's a rosy future for a product like this."

Continued on page 6

Mac gets graphics integration tool

BY JULIE PITTA
CW STAFF

CUPERTINO, Calif. — Capping a three-year development effort, Apple Computer, Inc. last week unveiled Hypercard, a $49 package the company dubbed a "personal tool kit" that allows Macintosh users to integrate text, graphics and video.

Apple heralded the product as a key element in its push to penetrate the corporate marketplace more effectively, a thrust the firm said will be aided by third-party software developers.

Reactions of corporate users contacted were generally positive. "It's a real breakthrough in software — it's only limited by the imagination," said Jeff Ehrlich, manager of product technology at General Electric Co. "In the beginning, people will use it for routine types of things, like appointment books and reminder systems, but as they see its power, it can be used for creating visual data bases and even creating training systems — all kinds of applications."

"I'm anxious to get my hands on it to play with it," said Orv Jordahl, senior manager of technical management information systems at McDonnell Douglas Corp.'s space station program. "It's going to allow users to take information and assemble it in ways meaningful to them."

However, James Hayes, vice-president of electronic services at Seafirst Corp., a Seattle-based Bankamerica Corp. subsidiary, cautioned that Hypercard's requirement of 1M byte of random-access memory may prove to be an obstacle to its use in his department. "I can see a lot of potential for it," he said. "But we'd have to upgrade all

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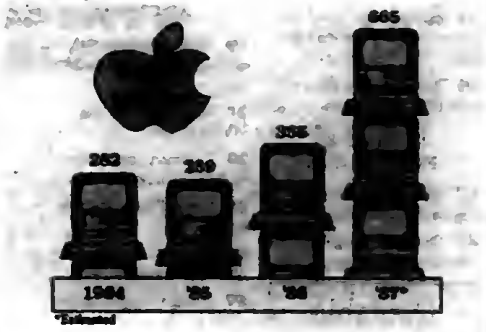
Bumper crop

U.S. Macintosh sales, boosted by third-party market, will nearly double this year



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CW CHART: MITCHELL J. HAYES

Tiny tape works big

2.2G-byte-size cassette called backup milestone

BY ED SCANNELL
CW STAFF

SAN DIEGO — Emerald Systems Corp. announced last week a tape backup system, a pocket calculator-size cassette tape that holds up to 2.2G bytes of data. The firm said the product will facilitate moving applications from minicomputers to high-powered microcomputers and will make it easier for micro users to do their own tape backup.

Dubbed the Vast Device, the product is aimed at corporations that need to manipulate large data bases and have local-area networks using file servers with disk volumes greater than 183M bytes. The company plans to ship the product Oct. 26.

"This [Vast Device] should help MIS managers in those ar-

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Inflation. Users say they'll try to extend life of VAX 8000 series systems after DEC's second round of price hikes on the popular line. Page 4.

Expansion. Among the products showcased by the estimated 270 vendors at Macworld Expo last week were a disk drive for Mac Plus from Jasmine Technology, a Mac II-compatible industrial computer from Automatix, a port server for the Appletalk network from Abaton Technology and a CAD system from Versacad. Page 9.

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"Large companies are staying away from us. People are very scared — they're in a standby mode, and it's hurting our sales."

RICHARD BEZJIAN
MOSAIC SOFTWARE, INC

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Hackers under the gun

Secret Service sweep yields arrests nationwide

BY MITCH BETTS
CW STAFF

The U.S. Secret Service and local police departments have put a scare into the hacker community with a nationwide crackdown on computer crime that has resulted in arrests of teen-age hackers in at least three cities.

"People who monitor the bulletin boards say there are a lot of nervous hackers out there, wondering who will be arrested next," said Ronald E. Freedman, vice-president of Advanced Information Management, Inc., a Woodbridge, Va.-based computer security firm.

Nine teen-agers from Mount Lebanon Junior-Senior High School near Pittsburgh were arrested recently and charged with computer fraud. The juveniles allegedly used home computers to gain illegal access to a credit card authorization center. They obtained valid credit card numbers and used them to purchase thousands of dollars worth of mail order merchandise, police said.

High-class operation

Freedman said it appears the hackers used some relatively sophisticated techniques in the scheme, including specially written software that enabled them to bypass security controls and navigate through credit records to obtain key information.

Police officials said the hackers also obtained access codes from pirate bulletin boards to make free long-distance calls and gain access to various business and government computers.

The arrests were the result of a six-week investigation by the Secret Service and the Mount Lebanon, Pa., police. The police were tipped off by parents who were suspicious about how their son obtained a $140 skateboard, Officer Tim Howell said.

In addition, the Secret Service was involved in investigations that led to the arrests of several hackers in New York and the San Francisco area last month.

Local hackers

Secret Service spokesman William Corbett said that although some reports have portrayed the hackers as part of a national crime ring, the cases are unrelated. "It's just that a few of these computer hacking cases came to a head at about the same time," he said.

Federal legislation enacted in 1984 gave the Secret Service, part of the Department of the Treasury, a major role in investigating computer crimes.

Under the federal Computer Fraud and Abuse Act of 1986, computer fraud is a felony that carries a maximum penalty of five years in prison for the first offense and 10 years for a second offense. Displaying unauthorized passwords on hacker bulletin boards carries a maximum penalty of one year in prison for the first offense and 10 years for the second offense.

Uccel buy-out receives shareholder approval

BY CLINTON WILDER
CW STAFF

The shareholders of Computer Associates International, Inc. and Uccel Corp. both overwhelmingly approved Computer Associates' proposed $780 million acquisition of Uccel in separate meetings last week.

The shareholder votes paved the way for the expected approval by the U.S. Department of Justice's antitrust division this week. The department last week requested a five-day extension of its desdline to act on the merger, extending it to Friday.

"I would be highly surprised if anything would happen to block the acquisition," said Prudential-Bache Securities, Inc. software industry analyst Charles Taylor Jr. "This is the Reagan administration looking at two companies that say they're combining partially as a defense against IBM."

Uccel said 13.8 million of the 13.9 million shares voting at the Dallas shareholders meeting approved the buy-out. Computer Associates shareholders meeting in Garden City, N.Y., cast 32.2 million of 32.6 million voting shares in favor of the acquisition.

Widen the gap

If approved by regulators, the deal will significantly extend Computer Associates' lead as the largest independent software vendor.

Reclusive Swiss businessman Walter Haefner, who owns 58% of Uccel stock, will become Computer Associates' largest shareholder, with about 21% of its shares.

Computer Associates Chairman Charles Wang and President Anthony Wang will together control about 10% of the company.

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VAX hikes meet with ire, shrugs

Some decked by second round of price increases; others grin and bear it

BY DAVID BRIGHT
CW STAFF

Digital Equipment Corp.'s second round of VAX price hikes in five months has disturbed some DEC customers, while others have accepted the action as "the nature of the business."

"Digital has yet to discover the magic of having client presence," said Richard White, director of MIS at Union Texas Petroleum Corp. in Houston. "They're trying to be more like IBM in their marketing and product-support efforts, but they've got thousands of miles to go. So as they increase their prices and nothing else gets better, it really makes you look for other ways of doing business."

Union Texas Petroleum runs both IBM and DEC systems. White said his strategy will be to extend the life of his company's VAX 8800 and 8500 systems as long as possible while software vendors port their petroleum engineering applications from DEC to IBM machines. "When they become available on IBM, we'll have an alternative to look at," he said.

Ten days after the most recent round of changes took effect, the DEC sales representative for Ball Corp.'s Aerospace Systems Division still could not quote the new prices, said Angelo Privetera, director of information at the Boulder, Colo., facility. Ball Aerospace also has a mix of DEC and IBM systems.

Privetera said having a flexible, mixed shop gives his company the option of increasing its percentage of IBM purchases if necessary.

"We're going back to Decworld next month," he said, "and we'll make it a point to speak to the powers that be about what we'll do next."

Two weeks ago, DEC raised prices on the high end of its VAX 8000 series by as much as 5.5%. The company dropped prices on the more competitive low end by a similar amount and slashed Microvax 2000 prices by up to 20% [CW, Aug. 10]. At the same time, DEC reduced PDP-11 prices, introduced denser VAX 8000 memory modules priced up to 30% less than the previous memory and raised prices by less than 5% on the balance of hardware and software products.

Echoes earlier shifts

The move was similar to the March restructuring, in which DEC increased high-end VAX 8000 series and low-end VMS software prices, brought out lower end systems with better price/performance and drastically reduced memory and mass storage prices [CW, March 9].

With such a changeable pricing structure, some customers and analysts worried last week that DEC's marketing organization had fallen into a state of confusion.

With DEC's high-end VAX 8000 shipment rates up, DEC is looking to increase its profit margins without losing any business, said Bob Randolph, director of the DEC Advisory Service at International Data Corp., a Framingham, Mass.-based market research firm. But with IBM's 9370 "breathing down its neck" at the low end, DEC was forced to cut prices, he said.

Randolph warned that DEC's recent volatile pricing could have a negative long-range impact with large, more conservative potential customers. "The kinds of customers they're going after are used to a reasonable degree of stability. DEC, in the last year, has shown everything but stability in some key areas, like pricing, policies and product offerings," Randolph said.

Some users not budging

But at New York-based Bantam Books, Inc., which bought several VAX 8550 systems just before the price hikes took effect, Data Processing and Systems Vice-President Frank Zazo said his company will stand by DEC. "No one likes to see prices go up, but it's the nature of the business to have periodic price increases that, percentage-wise, are not too much out of line," he said. "We're not going to move to another vendor."

Also standing pat is a large Eastern university with several VAX systems as well as a National Advanced Systems Corp. IBM plug-compatible mainframe. "Even though we're a mixed shop, changing from the DEC systems could mean a big software investment," the school's DP manager explained.

Now that it is realizing bigger profit margins on the high-end VAX systems, many observers said they expect DEC to begin offering more attractive discounts. "They'd been very tight on discounting the 8700," noted William Arms, vice-president of academic services at Carnegie-Mellon University in Pittsburgh. "Maybe they raised the price so they can give deeper discounts. It's like buying used cars."

DEC officials were unavailable to respond to users' and analysts' comments by press time.

Ups and downs

During the last five months, DEC's system prices have fallen on the low end, risen on the high end

*VAX prices are for building block systems with one-year VMS and Decnet licenses.

INFORMATION PROVIDED BY DIGITAL EQUIPMENT CORP.

Will Quattro land Borland in court?

BY STEPHEN JONES
CW STAFF

SCOTTS VALLEY, Calif. — Software industry watchers are eager to see if Borland International's forthcoming Quattro spreadsheet can offer all the features of Lotus Development Corp.'s 1-2-3 without copying the look and feel of the popular program.

Two other software companies that tried to walk the fine line between compatibility and blatant cloning of 1-2-3 have been slapped with lawsuits by Lotus for alleged copyright infringement. Separate suits charge Paperback Software International and Mosaic Software, Inc. with selling copycat versions of 1-2-3 that duplicate the program's commands and screen formats.

The litigation has hurt both Paperback Software and Mosaic since the suits were filed in January and has resulted in stalled-out sales and stinging hits to their bottom lines, the companies have claimed.

Soft interface a savior

But Borland said it is confident it can stay out of the courtroom, thanks to a soft interface that allows users to modify Quattro to look like several spreadsheet programs, including 1-2-3, Microsoft Corp.'s Multiplan and Computer Associates International, Inc.'s Supercalc. The idea is that Borland is leaving it up to the user to decide what kind of spreadsheet he wants to run, sources at Borland said.

Borland announced last week that Quattro would be released by the end of this year.

"The ability of the user to reconfigure the interface... avoids any potential that the product could impinge the rights of another publisher," said Robert Kohn, Borland's general counsel. "We're just providing the user with a file that implements a set of commands that many users are already familiar with." Kohn added that federal copyright laws that give users the freedom to modify a program legitimize the soft interface.

Quattro has received high marks from beta-test users who have customized the program to run like 1-2-3 while taking advantage of the new package's quick recalculation features and sharp graphics. John Boyd, a longtime Lotus customer who has a beta-test version of Quattro, said Borland has combined the best of 1-2-3 with high-functionality enhancements. "I'll switch to Borland as soon as the software is available," he said.

Lotus would not comment on Quattro because officials at the Cambridge, Mass., vendor have not seen a copy of the product, said James O'Donnell, a Lotus representative.

But Jim Manzi, president and chief executive officer of Lotus, expressed strong feelings in a recent prepared statement on the issue of software clones. "Recently, more and more software development talent, money and time has been spent on imitation rather than true innovation," Manzi said in the statement.

If Borland becomes entangled in a legal battle with Lotus, analysts said, the financially strong company has the big guns needed to beat a lawsuit. Paperback Software and Mosaic, on the other hand, have limited resources that are being swallowed up by the costly Lotus litigation.

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AK	Anchorage	Sep 9
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	Montgomery	Oct 15
AR	Little Rock	Sep 16, Nov 10
AZ	Phoenix	Sep 22, Oct 22, Nov 19
	Tucson	Oct 21
CA	Lafayette	Sep 24, Nov 12
	Los Angeles	Sep 6, Sep 30, Oct 15, Oct 29, Nov 12
	Newport Beach	Sep 17, Oct 6
	Sacramento	Oct 15
	San Diego	Sep 16, Oct 8
	San Francisco	Sep 15, Oct 20, Nov 17
	San Jose	Sep 2, Oct 7, Nov 5
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OR	Portland	Oct 6
PA	Harrisburg	Sep 15, Oct 22, Nov 12
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	Pittsburgh	Sep 8, Nov 4
SC	Greenville	Oct 14
TN	Knoxville	Nov 4
	Memphis	Oct 14
	Nashville	Oct 21
TX	Amarillo	Oct 13
	Austin	Oct 9
	Dallas	Sep 9, Oct 6, Nov 4
	Houston	Sep 18, Oct 16, Nov 18
	San Antonio	Oct 8
UT	Salt Lake City	Sep 29, Oct 29
VA	Norfolk	Oct 29
	Richmond	Sep 8, Nov 17
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VT	Burlington	Sep 2
WA	Seattle	Sep 3, Oct 15, Nov 10
WI	Madison	Nov 12
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CANADIAN SEMINARS

Calgary	Sep 9, Nov 18
Hamilton	Oct 20
London	Sep 15, Nov 17
Ottawa	Sep 3, Oct 1, Nov 5
Regina	Oct 27
Saskatoon	Nov 3
Toronto	Sep 6, Oct 13, Nov 10
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TCP/IP development push on

Air Force interest sparks vendors to work double time creating products

BY ELISABETH HORWITT
CW STAFF

A contract to supply the U.S. Air Force with a $200 million multivendor networking system has galvanized major network and computer vendors to develop Transmission Control Protocol/Internet Protocol (TCP/IP) network management protocols and products that could be commercially available within a year, according to sources close to the project.

The initial Air Force contract, for which proposals are due this week, calls for a prototype Unified LAN Architecture (ULANA) that would link a wide variety of computers and workstations at the Gunther Air Force Base using TCP/IP. If that $20 million project is successful, the system will be expanded to link a large portion of the Air Force sites at a cost of approximately $200 million, according to one prime contractor.

Companies involved as subcontractors in the ULANA bid reportedly include Bridge Communications, Inc., IBM, Sun Microsystems, Inc., Hewlett-Packard Co., Excelan, Inc., Sytek, Inc., Communication Machinery Corp. and Ungermann-Bass, Inc.

Digital Equipment Corp. equipment is incorporated into the proposal of prime contractor Computer Sciences Corp. However, "Digital's heart and soul is not in it," said Daniel Lynch, president of Cupertino, Calif.-based consulting firm Advanced Computing Environment. "They do not directly support TCP/IP."

Gaining favor

Originally developed for the U.S. Department of Defense, TCP/IP has gained increasing support from vendors and users who are tired of waiting for the Open Systems Interconnect (OSI) networking standard to arrive.

The Air Force was a prime mover in the formation of a TCP/IP network management task group at the TCP/IP Workshop held in Monterey, Calif., in March, Lynch said. "The ULANA project clearly states TCP/IP and asks for network management functionality that doesn't presently exist," he added.

The contract has acted as a stimulus for vendors to come up with a TCP/IP network management standard. Vendors who are participating in the ULANA bid "understood that network management is a prerequisite for meeting Mitre's request for proposals and have all promised to conform to the protocols once they are developed," Lynch said. Mitre Corp. is the Bedford, Mass.-based company managing the ULANA project for the Air Force.

The Air Force and the DOD both "want a standard network management system that will work across all programs, as soon as it can get done across vendor lines," said Stan Ames, a department head at Mitre. Trial implementations for the project should be done by the fall, and vendors could start offering commercially what they develop for the project approximately nine months later, Ames said.

The ULANA installation, which will go into trial implementation this fall, should be up and running before TCP/IP network management specifications are finalized, according to Bridge President William Carrico. "Assuming we win the contract, we will implement our existing NCS/2 Sun-based network management system, then migrate our software to match [the network management task group's]," he said.

TCP/IP network management development should go much more quickly than the parallel OSI effort, "which is far more broad-based," Carrico said.

The task group hopes to firm up the specifications for the protocols by year's end. It could take vendors as little as six months to implement the specifications in commercial products, according to Bridge Vice-President of Engineering Eric Benhamou, who is a member of the group.

Customs trips on $40M coat check gaffe

BY DAVID A. LUDLUM
CW STAFF

WASHINGTON, D.C. — A programming error at the U.S. Customs Service temporarily stranded an estimated $40 million worth of cotton coats from China that were awaiting importation to the U.S.

Because of the error, a Customs Service computer failed to record the importation of about 3.3 million coats between June 1986 and May.

Quotas had limited importation of the coats to roughly 3.5 million last year and 3.7 million this year.

The low figure that the Customs Service reported for the imports at the end of 1986 led importers to step up shipments early this year.

Coats left hanging

But after discovering the error, the Customs Service moved to redress it by declaring that the quota for this year's imports had been met, which stranded about 2.4 million coats worth an estimated $40 million that were in bonded warehouses awaiting importation.

The glitch arose in June 1986 during conversion to a new trade quota record-keeping system that was intended to integrate the quota system with other Customs Service applications.

The new system runs on an IBM 3090 under OS/MVS with a CICS teleprocessing monitor.

Havoc from blank fields

A programmer mistakenly left blank two of the 4,454 fields in the program that apply to imports from China, according to Karen Cooper, director of the Customs Service quota branch, noting that many of the fields are supposed to be left blank.

The programming error prevented two subcategories of the coats from being included when the total for the category was calculated.

Customs officials at ports around the country enter import data into the on-line real-time system.

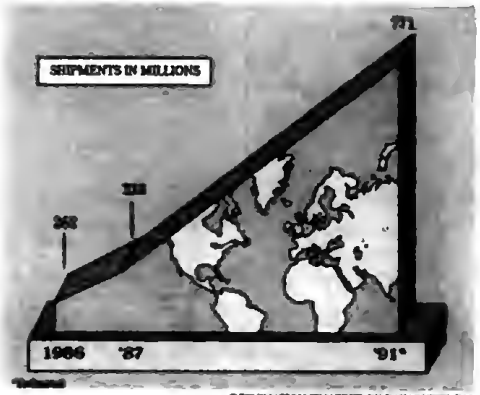
The system does not contain edit or validation procedures that would alert officials in Washington, D.C., to omissions, such as the ones arising from the blank fields, which would require them to check reports manually.

"We spent as much time as we could checking but didn't get to this one until May," Cooper said.

Validation procedures now are being built into the system, she said.

Demand swells

Worldwide shipments of packet-switching devices



INFORMATION PROVIDED BY DATAQUEST, INC.
CW CHART: AMY J. SWANSON

Tymnet

FROM PAGE 1

Ken Bosomworth, president of International Resource Development, Inc., added, "The high end of the spectrum has already been saturated. Now there's plenty of room in the low end of the market."

'Reasonable' price tag

While not the least expensive product on the market, the switch is positioned with a "very reasonable" price tag, Marney-Petix noted, since the MD 7408 is packaged in the same unit with a packet assembler/disassembler (PAD).

Many vendors, such as Micom Systems, Inc. in Simi Valley, Calif., and Telenet Communications Corp. in Reston, Va., typically sell their switches separately from their PADs.

The MD 7408 is considered the most significant offering in a battery of hardware enhancements and software announcements that Tymnet is set to release in mid- and late September at the Tele-Communications Association show held in San Diego, according to company officials.

Need apparent

Even Tymnet's fiercest high-end competitors see the need to add smaller switches to round out their product lines.

Telenet Communications reportedly expects to announce a low-end packet node with fewer than 50 ports in November.

Its smallest switch now is the TP 5254, with 112 ports.

Meanwhile, BBN Communications Corp. in Cambridge, Mass., is already taking orders for the 12-port C/3, its first small engine, which was unveiled in March.

According to Jeff Stern, Tymnet manager of hardware systems, the desktop MD 7408 is equipped with eight ports and will cost between $8,000 and $15,000, depending on the user's configuration.

Up until now, the smallest switch in the Tymnet Micro Engine product line has been the Model 4, a switch that supports 14 ports and is priced at more than $15,000.

The MD 7408 will support popular protocols such as CCITT's X.25, Synchronous Data Link Control and bisynchronous and asynchronous communications simultaneously.

Users reportedly can configure four of the eight ports to handle up to four links at speeds of 64K bit/sec. and 9.6K bit/sec.

Size of a PC

The switch employs very large-scale integration technology that enables engineers to downsize the components, according to Tom Chard, Tymnet product manager.

The unit, which houses a PAD concentrator, is approximately the size of a personal computer, according to the company.

Tymnet officials stressed that the switch will compete head-on with the synchronous PAD market since it can handle synchronous protocol conversion functions.

Stern said Tymnet expects financial institutions to use the switch to support critical jobs such as cash deposits and money transfer. He also said retail and insurance users can deploy the miniature switches in smaller sites.

Ideal for small offices

One user of Tymnet products, Jim Chatleain, technical consultant at Alascom, Inc. in Anchorage, Ala., said a low-end switch would be ideal for his company's small offices.

"Being in Alaska, we have offices spread out over many small communities. We wouldn't be able to justify a high-end piece of equipment, but a small switch is something we would be interested in," he said.

The MD 7408 is compatible with all of Tymnet's existing hardware, communications software and network management tools, Stern said.

It will also feature a battery backup that holds memory for up to 72 hours.

While the product will be sold to users of private-packet networks, Tymnet will also deploy the switches in its public network to regions the company is currently not serving.

Tymnet's public network has switches in 600 locations in the U.S.

According to Stern, Tymnet will seed the country with the low-end switches where necessary.

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Mac boosts networking capabilities

Pursues corporate accounts with line of four connectivity products

BY STEPHEN JONES
CW STAFF

Apple Computer, Inc. last week announced a line of desktop connectivity products designed to boost the Macintosh's limited networking capabilities and win over a large portion of the corporate marketplace.

The four products, including an Ethernet add-in card for the Macintosh II, are aimed at establishing the Mac as a serious business machine among corporate users, analysts said. The new offerings were announced at the Macworld Expo in Boston.

"Apple is very much going after the corporate environment with these business-oriented products," said Brad Baldwin, an industry analyst with market research firm Dataquest, Inc.

"Apple knows that the more business products you supply on a computer, the more that computer will come before an MIS manager as a possible solution," Baldwin said.

Fast interface card

The Ethertalk Interface Card, which is said to run up to 40 times faster than the vendor's current Appletalk, could warm up corporate users who in the past have shied away from the Mac because of Appletalk's sluggish networking performance. However, third-party Ethernet products are available for Appletalk. The $699 package, which is due by the end of the year, uses a board from 3Com Corp. to connect Mac users to Ethernet.

Described by Baldwin as a "quantum leap" over Appletalk, Ethertalk will give users access to the 10M byte/sec. Ethernet network. In contrast, Appletalk currently runs at approximately 230K byte/sec.

Appleshare PC Software, meanwhile, allows Mac users to transparently share information with IBM computers when used with the Appletalk PC Card, which was announced in January. A price has not been announced for the software, but Apple said it will be available in the first quarter of 1988.

Transfer and translate

Apple File Exchange, which will be included in the system software for new Macs, has the ability to transfer and translate documents created in Microsoft Corp. MS-DOS and Prodos environments.

The software is expected to be bundled with the Mac in the third quarter.

A $699 desktop facsimile modem called Applefax can exchange information between two Macintoshes at speeds up to 9.6K bit/sec. Although it has no scanner, the modem is compatible with industry-standard Group 2 and Group 3 facsimile machines and the international standard.

Mac

FROM PAGE 1

the machines; 99% have only 512K bytes of RAM, and that's expensive."

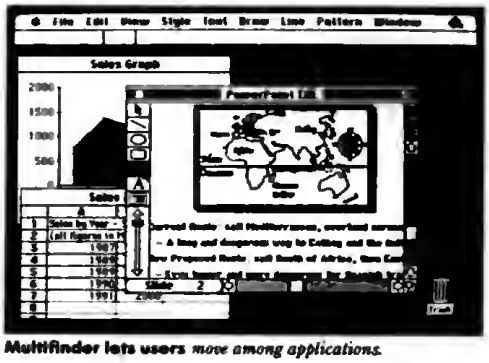
Available this month, Hypercard is a relational data base organized around an index card concept. Users can store information on "cards" as they would jot notes on an index card. The software allows users to organize information by linking cards, which are then organized into "stacks."

Hypercard is composed of three disks and a backup. Each disk, in turn, is made up of a number of stacks.

Apple officials said they envision the product being used by businesses to serve as front ends to large data bases. Additionally, corporate users could employ Hypercard in creating interactive training systems, the company claimed.

Hypercard will be bundled with every new Macintosh shipped. It requires a Macintosh with at least 1M byte of RAM and two 800K-byte floppy disk drives. However, the company recommends a hard disk for maximum performance.

Apple last week also unveiled Multifinder, a multitasking operating system for the Macintosh that the firm said enables users to switch between applications across different operating environments, including Microsoft Corp.'s MS-DOS.



Multifinder lets users *move among applications.*

Scheduled to be available in late September, Multifinder will be shipped in all new Macintoshes. Current users can receive Multifinder for $49 in Apple's new Macintosh System Software Update, which will be sold through dealers and through the company.

While Multifinder was received favorably, industry observers last week focused their attention on Hypercard.

"Multifinder is a checkoff. It's something that's been needed," said Esther Dyson, editor of the "Release 1.0" newsletter. "Hypercard is wonderful stuff."

Dyson said Hypercard is another step for Apple toward increasing the Macintosh's appeal to individual users. Microsoft's MS OS/2 "is very much a corporate tool," she said. "With Hypercard, Apple is empowering the user. What has made the Macintosh successful in the face of terrible odds has been the strides Apple has made in powering systems software. This is one more step in that direction."

Tiny tape

FROM PAGE 1

eas where users have a disk capacity much greater than their tape backup," said Tom Toperczer, Emerald's director of product management.

"It provides an easy way for users to do their own backup without disrupting the MIS manager's schedule," he said.

Analysts see the product as a significant breakthrough in terms of price and capacity but believe it will probably not gain immediate widespread acceptance among users because the cassettes cannot be used with drives made by other manufacturers.

"This is a significant advance in capability," said Ray Freeman of Freeman Associates, a research and consulting firm. "But it is hard to say how widely accepted it will be because it is such a unique product."

Toperczer agrees that the product's inability to be used with a wide range of drives will slow any early momentum, but he said he thinks that Vast Device will be readily accepted by those who have a critical need for it.

Setting the pace

"People that have to have high-capacity backup won't find that a drawback. And as the product becomes more accepted, other companies will produce compatible products," Toperczer said.

Another factor that might hasten acceptance of the system is the influx of Intel Corp. 80386-based systems such as IBM's recently announced high-end Personal System/2 Model 80, which handles up to 300M bytes.

Because the Vast Device is an off-line medium, Toperczer said, it is possible for MIS managers to exchange massive data sets to outlying divisions of their companies.

"The product will prove interesting for people using distributed data bases and distributed transaction processing," he added.

CD-ROM alternative

The Vast Device is an attractive price/performance alternative to compact disk/read-only memory products because it is erasable and is a proven technology that can be delivered today, Toperczer said.

"The optical disk community has been working on [erasable disks] for years but hasn't delivered any. We have tape technology that is read-write and can be delivered today," he said.

The product uses Emerald Systems' helical scan recording technology, which yields a disk-to-tape backup speed of up to 15M byte/min., a company spokesman said.

Vast Device cassettes are available in four sizes: 250M and 500M bytes and 1G and 2.2G bytes.

Nonobsolescence

A "nonobsolescence" feature allows users to start off with just one Vast Device and to link additional Vast Devices for unattended data archive capacities of more than 15G bytes.

The unit measures 16 by 14 by 8 in. and interfaces to IBM desktop computers using a 60-in. cable and an Emerald controller board that plugs directly into a desktop system.

The Vast Device cassette can hold the equivalent of almost 6,200 floppies and one million sheets of paper.

The device can be installed in a few minutes, according to the company. The product's software can be installed on any IBM system's hard disk.

Synoptics Ethernet hits 10M bits

BY PATRICIA KEEFE
CW STAFF

MOUNTAIN VIEW, Calif. — Synoptics Communications, Inc. will become the first vendor to offer 10M-bit Ethernet over unshielded twisted-pair cabling with today's scheduled announcement of immediate availability of its Lattisnet version of that technology.

In addition, AT&T said it has certified Lattisnet for operation over its Premises Distribution System (PDS) cabling system.

Unshielded Twisted Pair Lattisnet is the result of a joint effort initiated between AT&T and Synoptics in January. The project combined technology tested by Synoptics with a testing and certification process technically managed by AT&T.

The resulting technology reportedly allows companies to install a single local-area network cabling system using standard telephone wire to support high-speed Ethernet over three major premises cabling systems: fiber optics; the IBM Cabling System, which is a shielded twisted-pair option; and AT&T's PDS, the unshielded twisted-pair.

Beta-test results

The latest Lattisnet offering has been in operation for two months at eight beta-test sites, operating reliably within the ANSI and IEEE 802.3 Ethernet specification, Synoptics claimed.

It uses a star topology and allows up to 330 feet of horizontal telephone cable between the wiring center and the work area. Both the transceiver and the host module in the concentrator use standard AT&T four-position modular jacks. The concentrators are located in wiring closets and connected by a fiber-optic backbone.

Consisting of Model 405 host modules and Model 505 transceivers, Unshielded Twisted Pair Lattisnet costs approximately $500 per node.

Both companies said they will pursue marketing opportunities for PDS. The two firms also said they will continue to jointly explore new implementations of the Lattisnet technology within the PDS architecture.

Although conceding the importance of running 10M-bit Ethernet over unshielded twisted-pair, analysts cautioned that users may still have to pull new cable.

Much of the installed wiring today is unusable, analysts claimed, warning that users may find themselves tied up in a "rat's nest" of cabling.

Apple enhancements sprout at Macworld

Open architecture spurs bounty of third-party vendor product introductions at show

BY ALAN J. RYAN
CW STAFF

BOSTON — By opening up the architecture of its Macintosh computer, Apple Computer, Inc. has created a seemingly boundless market for third-party vendors, as was evidenced at last week's Macworld Expo here.

"The market for expansion boards and other devices that enhance the capability of the Mac is an explosively growing market," said Benny Lorenzo, an analyst with L. F. Rothschild & Co.

Because of the open architecture and its expandability, the Macintosh is "finding wide acceptance in the large-account area," Lorenzo added.

The following hardware and software products for the Mac were introduced last week by third-party developers:

• Jasmine Technologies, Inc. in San Francisco demonstrated its Backpac 40 disk drive for the Macintosh Plus and its family of internal disk drives for the Macintosh.

The Backpac 40 external 40M-byte small computer systems interface drive mounts on the back of the Macintosh Plus and sells for $1,299. The internal 90M-byte Innerdrive 90/II sells for $1,499 and reportedly has a 16-msec access time.

• Automatix, Inc. released a Macintosh II-compatible industrial computer, the AI 90, which was designed for use on factory floors. The Billerica, Mass.-based company said the 100%-compatible system features an open Nubus architecture along with a Motorola, Inc. 68020 32-bit processor.

The system runs Macintosh II software and has optional support for Microsoft Corp.'a MS-DOS and Unix programs. The price of the unit is $8,500 in its atandard version.

• A 15-in. full-page display for the Mac was introduced by San Jose, Calif.-based Radius, Inc. The Full Page Display has a resolution of 864 by 640 pixels and a refresh rate of 67Hz, the company claimed. It is priced at $1,995 and is slated to be available in the fourth quarter.

• Sigma Designs, Inc. in Fremont, Calif., also announced a page-display unit. The Laserview Display System, a high-resolution, large-screen monitor system, includes the monitor and a display adapter board. Two resolutions are available: 1,664 by 1,200 or 832 by 600 pixels, both in noninterlaced mode. The 15-in. version is priced at $1,895, and the 19-in. version costs $2,395.

• Abaton Technology Corp. in Pleasanton, Calif., displayed Multitalk, a port server that reportedly expands the capability of the Appletalk network to accommodate peripherals in addition to other computers.

The server requires that peripherals such as modems, plotters and mainframe and minicomputer links have an RS-232 interface and communicate at speeds between 75 and 9.6K bit/sec.

• Nantucket Corp. in Los Angeles, maker of the Clipper compiler for Ashton-Tate'a Dbase III, demonstrated McMax, a relational data base management system for the Mac. The system, which will reportedly sell for $295 when it begins shipping early next month, is fully Dbase III compatible, the company said.

• Versacad Corp. announced its Versacad/Macintosh Edition, a two-dimensional computer-aided design system. The package, priced at $1,995, is slated for release on Dec. 1.

• Human Intellect Systems, a San Mateo, Calif.-based developer of expert systems software, introduced Instant-Expert Plus, an environment for nonprogrammers that the vendor said lets them develop expert system applications. The program uses natural language rule entry, interactive graphics, variables and more than 18 different inference engine search strategies, the company said.

The Mac version is set to ship in October at a retail price of $498.

• Cambridge, Mass.-based Cognition Technology Corp. released Version 2 of its Macsmarts expert system tool. Version 2 adds hypertext techniques for creating knowledge bases that combine rules, graphics, data bases, text, spreadsheets and other forms of knowledge, the vendor said. It sells for $149.95 and is available immediately.

• Officetalk, Inc. in Bala Cynwyd, Pa., described an electronic mail and bulletin-board service that allows Macintosh and personal computer users to send graphics and text to as many as 400 recipients worldwide. Officetalk also allows users to set up private bulletin boards and on-line technical libraries for fast communication with branch offices, customers and others.

The service is available with a registration fee of $50 per address. On-line rates are 80 cents per minute during prime time and 40 cents during nonprime hours.

• Cambridge, Mass.-based GW Instruments released hardware and software to handle data acquisition, data analysis and external control applications on the 32-bit Macintosh II. The Macadios II is a 10-board set supporting both analog and digital channels. Complete systems sell for between $1,500 and $10,000.

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Zenith snares $104M Pentagon deal

BY MITCH BETTS
CW STAFF

Zenith Data Systems, which has been extremely successful in selling microcomputers to the federal government, last week won the biggest prize of all: a $104.5 million contract to provide the military with an estimated 90,000 of its Z-180 series laptop microcomputers. It was the largest government contract for laptops ever awarded.

The Glenview, Ill.-based subsidiary of Zenith Electronics Corp. reportedly won with a bid that beat out 17 other competitors, including Toshiba America, Inc.

Zenith is the largest supplier of microcomputers to the federal government. In 1984, it won a contract to supply the military with 10,000 desktop computers; in 1986, the firm won a widely publicized contract to supply the Internal Revenue Service with 15,000 laptops for auditors.

The battery-operated Z-180 laptops feature a backlit supertwist LCD screen. Zenith will supply dual-floppy and Winchester hard disk drive versions of the computer, as well as peripherals, technical support, maintenance and software support.

In addition, Zenith said it will provide Microsoft Corp.'s MS-DOS Manager, a new interface developed by Microsoft for Zenith that helps the user move through the operating system more easily.

Under the three-year contract, Zenith will supply the laptops for use worldwide by the U.S. Navy, Air Force, Army, Defense Logistics Agency and other military agencies. The Z-180 was designated as the Pentagon's preferred general-purpose portable micro by the Air Force Computer Acquisition Center at the Hanscom Air Force Base in Bedford, Mass., which handled the contract.

The procurement had been delayed earlier this summer while the Pentagon investigated Toshiba Machine Co. of Japan, a company affiliated with Toshiba America, concerning the former's illegal sale of submarine technology to the Soviet Union [CW, June 29]. However, Toshiba America ultimately was not barred from competing for the laptop contract.

Find Out What's Going On Between Apple And IBM.

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Orchid PS/2 card blooms

Orchid Technology, Inc. said it will announce later this month a new version of its PC Net local-area network (LAN) interface card for the IBM Personal System/2 Micro Channel architecture series.

PC Net/2 is expected to provide 8% to 10% faster throughput between IBM Personal Computers and PS/2 models connected on Orchid's PC Net LAN, according to Bill Berkman, product manager at Orchid.

Since at least half of Orchid's existing 80,000 to 120,000 PC Net customers also run Novell, Inc.'s Netware, the two companies are working on modifications to ensure PC Net/2 compatibility with the Netware software driver, Berkman said.

The PC Net LAN reportedly supports up to 60 users and is software compatible with the majority of microcomputer LAN software communications and applications packages as well as IBM's Token-Ring and PC Network.

No major changes

PC Net/2 will take advantage of such Micro Channel features as burst mode direct-memory access for faster throughput; otherwise, no major changes were required for the board, according to Berkman.

Orchid first released PC Net in 1983. The company is seeking to gain a foothold in the emerging PS/2 aftermarket and the expanding communications market.

Pricing and availability have not been determined, Berkman said.

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3Com, Atlantic Microsystems tie marketing knot

BY PATRICIA KEEFE
CW STAFF

BOSTON — 3Com Corp. last week confirmed plans to co-market — and perhaps privately label — fault-tolerant technology from Atlantic Microsystems, Inc. in Salem, N.H.

The two companies are in the process of certifying Atlantic Microsystems' products on Santa Clara, Calif.-based 3Com's Ethernet network and said they will complete testing within three weeks.

"If it really works the way they say it does, then we'll OEM the product," 3Com President William Krause said. Development efforts are already under way to port Atlantic Microsystems' fault-tolerant software to 3Com's 3Server3 file server, added Joe Flack, Atlantic Microsystems' marketing manager.

Atlantic Microsystems has developed two IBM Personal Computer AT-based fault-tolerant servers for Ethernet and IBM Token-Ring microcomputer networks, Flack said. Both products run Microsoft Corp.'s MS-DOS and support off-the-shelf applications with no modifications, he said.

Atlantic Microsystems' Me2 is said to enable disk mirroring between two hard disks within a single stand-alone workstation. However, if the AT goes down, both disks will crash. The network operator can also assign partitions on the disks. It costs $385 and began shipping in May.

There is a second networked version of Me2 that supports 3Com's 3+ software and adapter cards, Flack said. It costs $1,285. 3Com is interested in plans for a third version, ported to the 3Server3 and enhanced with features such as disk error correction, Flack said.

The Equalizer2 provides yet a higher level of fault tolerance via mirrored file servers. It requires two ATs, which mirror activity on the primary server to the secondary machine. In the event of a crash, the user reboots the backup server and is up and running, Flack said.

The Equalizer2, which is set to be demonstrated at PC Expo next month in New York, is not shipping yet.

A 3Com-specific application is expected to cost at least $7,000, including two boards, cabling and software, Flack said. The Equalizer2 would give 3Com a leg up on rival Novell, Inc., which has shipped two levels of its System Fault Tolerant line.

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Space center averts havoc

HOUSTON — Preparation for storm damage helped protect Johnson Space Center's mission control system when a water pipe damaged by workers spilled thousands of gallons of water on it recently.

After the pipe was broken, space center employees quickly shut off power to the system and covered it with plastic sheets stored nearby for protection from storms, according to Kelly Humphries, a space center spokesman.

The water soaked three cabinets containing peripheral equipment, such as a multiplexer/demultiplexer, but not the cabinets housing the system's four IBM 3083 main processors, space center spokesmen said.

The system, which is used both to monitor space shuttle flights and to run flight simulations, was back in operation 2½ days after workers installing a power cable broke a fitting from the air conditioner's water pipe.

A simulation of a space shuttle reentry being conducted at the time was suspended. During a shuttle mission, the control system is backed up by another at Goddard Space Flight Center in Maryland. "There wouldn't be anyone working in there during a mission," said Kyle Herring, a space center spokesman.

Wang tightens grip on PBX market

Will enhance Telenova system, meld it to high end of Intecom line

BY ELISABETH HORWITT
CW STAFF

Working to leverage its two private branch exchange (PBX) investments more effectively, Wang Laboratories, Inc. last week announced that it has purchased nonexclusive rights to enhance and resell Telenova, Inc.'s Telenova1, and has given its wholly owned subsidiary, Intecom, Inc., the job of integrating the low-end PBX with Intecom's high-end PBX line.

Net gain

Sales of digital voice/data PBXs are expected to increase steadily through 1989

INFORMATION PROVIDED BY SALOMON BROTHERS, INC.
CW CHART

In exchange for its reselling right to Telenova's product, Wang relinquished 30% of the 40% investment it made in the PBX company two years ago. International Data Corp. (IDC) Senior Analyst Jeff Kaplan suggested that Wang was "trying to reduce the cost burden of its percentage share in Telenova, having recognized that the PBX field has s limited opportunity for growth and profits."

According to an IDC report, Intecom sales constituted 1.3% of total market revenue in 1986, while Telenova's sales made up less than 0.1%. However, Telenova reportedly finished the year in the black.

Wang Vice-President Tim Cronin emphasized that the consolidation of Telenova and Intecom products under the Wang subsidiary's administration represented "just the opposite of s cutback," marking Wang's next step toward "integrating different forms of information on the desktop."

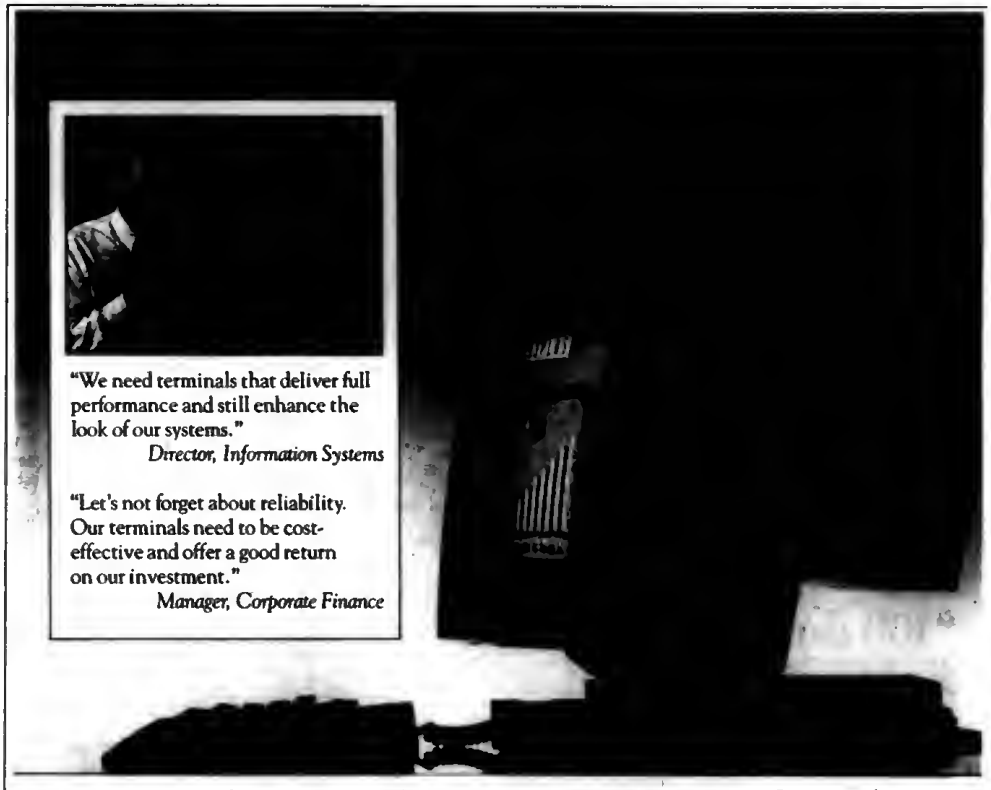
With the continued input of Telenova's research and development staff, Intecom will continue to work toward "two types of integration," Cronin noted. One priority is bridging the gap between Telenova's PBXs, which support between 20 and 160 lines, and Intecom's product family, which supports 700 to 20,000 lines.

"We want to overlap the two product families and build in network capabilities and feature transfer so, for example, least-cost routing on the small switch is also available on the larger one," Cronin said. Merging the two PBX lines' protocols will allow networking and feature portability so that voice mail routing, conference calling, call management and other features will be available across multiple PBXs, he added. Wang-Intecom is also working toward s single network management system for PBX lines, Cronin explained.

Wang hopes to provide better integration between the PBXs and its VS computers, for example, to allow users to share client files among workstations through the PBX, Cronin said.

Under the terms of the agreement, Wang has also acquired exclusive rights to sell its Integrated Office Solution, which meshes s Telenova1, a VS host and application software into s system designed to support vertical applications.

While Telenova will continue to manufacture the Telenova1 for Wang, there is s possibility that Intecom will take over that job in the future as well, Cronin said. By relinquishing the bulk of its holdings, Wang frees Telenova to pursue relationships with investors that had been put off by the vendor's dominant presence, Telenova said.



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Microrim taps Dbase

Graphics tool made compatible with data base

BY ALAN J. RYAN
CW STAFF

REDMOND, Wash. — Acknowledging the substantial installed base lead that Ashton-Tate's Dbase holds in the data base market, Microrim, Inc. last week announced a Dbase-compatible graphics package.

Microrim, which has long positioned its R:base product as an alternative to Dbase, said the DB Graphics package will work with R:base and other data bases as well. A spokesman hinted that the package would eventually be followed by other Dbase-compatible products.

Marco Hegyi, Microrim vice-president of marketing, said the company is "segmenting the graphics market by going after the data base user."

Because DB Graphics reads live Dbase III, Dbase III Plus and R:base data, import and conversion utilities are avoided, the company said. Users can read the data base directly and use the product's data management functions to select the data that will be graphically displayed. DB Graphics can also be used as a stand-alone presentation graphics package.

DB Graphics, which reportedly will sell for $295 when it becomes available next month, operates on the IBM Personal System/2 and on Personal Computer XT, AT and compatible microcomputers. It requires Microsoft Corp.'s MS-DOS 2.0 or higher in a single-user application and MS-DOS 3.1 in local-area network applications.

Sample screen *from Microrim's DB Graphics package*

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CWRLD817

Novell opens architecture

BY PATRICIA KEEFE
CW STAFF

PROVO, Utah — Novell, Inc. opens up its architecture to third parties today with the introduction of System Fault Tolerant (SFT) Advanced Netware 2.1, a version of its network operating system said to feature minicomputer and time-share capabilities.

Among the many new features are built-in fault tolerance, significantly increased network management and security features and, for the first time, hooks to enable third parties to develop hardware and software extensions to the operating system.

Early reaction from users and resellers who have previewed the product is generally positive. However, most users will have to wait until the first quarter of 1988 to take advantage of the enhanced software. Priced at $4,695, SFT Advanced Netware 2.1 will be available, on a limited basis only, during the fourth quarter, Novell said.

SFT Advanced Netware 2.1 incorporates all of the features of Version 2.0A, including the Transaction Tracking System, which was previously sold as an option.

Application programming interfaces for third-party software and hardware developers provide the hooks, or value-added processes and value-added drivers. Value-added processes enable programmers to develop multitasking applications in protected and real-time mode, said Craig Burton, Novell's vice-president of corporate planning and development.

The processes also aid in the development of server-based applications. Value-added drivers enable users to use non-Novell drives on their networks. Netware users are currently limited to a volume size of 250M bytes, said Edward Wilk, a microcomputer network specialist with television station WNEV in Boston. "That will no longer be a problem," he said.

Among the highlights of SFT Advanced Netware 2.1 are a virtual console, which allows a supervisor to monitor a local-area network and gather information on the status of the server from any workstation on the network, as well as remotely, and accounting and billing services that include audit trails of disk use.

DG settles suit with Digidyne for $26M charge

WESTBORO, Mass. — For the second straight year, financially reeling Data General Corp. will take a substantial charge against fourth-quarter earnings to pay a successful plaintiff from a 9-year-old software bundling suit.

DG announced last week it will take a $26 million charge to cover an out-of-court settlement with Digidyne Corp. With DG posting losses of $104 million in the first nine months of the fiscal year, last week's announcement virtually assured that its losses will exceed $100 million for the year.

In 1978, Digidyne filed a joint suit with Fairchild Semiconductor Corp., charging that DG's refusal to unbundle the operating system for its Nova minicomputers was unfairly restrictive. A federal judge essentially upheld the plaintiff's arguments last year.

DG then reached a $52.5 million settlement with Fairchild and took a $29.4 million charge against fiscal 1986 fourth-quarter earnings.

DG said it will take the charge relating to the Digidyne settlement in its current quarter, ending Sept. 30.

DG had a loss of $65.1 million in its most recent quarter, ended June 30, mainly from one-time charges associated with a recent layoff and plant closings.

The settlement ends all pending litigation relating to the Nova software bundling suit.

Cullinet wins bank contract

BY ROSEMARY HAMILTON
CW STAFF

NEW YORK — American Express Bank Ltd. announced last week that it will use the Cullinet Software, Inc. Banking System as the basis for its new corporatewide international banking software.

The Cullinet selection comes after American Express reviewed a number of banking software vendors, including Uccel Corp. and Hogan Systems, Inc., according to Michael Tuohy, first vice-president of global systems at the bank.

Neither party would reveal the value of the contract, but the IDG News Service reported the value is in the $6 million range. A single copy of the software is priced at $2 million, which includes the cost of Cullinet's IDMS/R data base management system — a requirement for the banking system.

Tuohy said the system is being installed at the bank's corporate headquarters and will "wind up on about 15 CPUs." He declined to say whether the bank will be charged a license fee for each installation. Tuohy said no other banking software vendors offered as comprehensive a system as Cullinet.

"We looked at Uccel, but they couldn't present a concrete system," he said. "We had discussions with Hogan, but we thought Cullinet had a better approach."

Software AG tiered pricing to emulate IBM's

RESTON, Va. — Software AG of North America, Inc. will introduce a tiered pricing structure next month that is similar to IBM's graduated pricing scheme, the company said last week.

The structure will bring price hikes to some customers, such as high-end IBM MVS and PC-DOS users, while greatly benefiting low-end IBM and Digital Equipment Corp. users.

IBM's VM users, regardless of processor size, will also see steep price cuts for products, such as Software AG's Adabas relational data base management system.

In the IBM market, Software AG reportedly will offer prices based on the four groups of processors as defined by IBM. Within these groups, pricing will vary depending on the operating system.

The IBM structure starts with Group 10, which includes IBM's low-end 9370 models, and moves up to Group 40, made up of IBM's high-end 3090 models.

A five-group DEC pricing scheme begins with Group 5, which includes the Microvax II and Microvax 2000, and is topped off with Group 40, which is based on DEC's VAX 8800 series. With the old pricing policy, an Adabas license for MVS users was $178,000. As of Sept. 1, the prices for MVS users will be $150,000 for Group 20, $170,000 for Group 30 and $190,000 for Group 40. VM users have been paying $142,000 for an Adabas license. New pricing starts at $30,000 for Group 10, $53,000 for Group 20 and $113,000 for Groups 30 and 40.

For DEC hardware, an Adabas license was $25,000 for a Microvax-class system and $70,000 for all other processors. New prices are scheduled to be $10,000 for Group 5; $20,000 for Group 10, which includes the VAX-11/700 series; $40,000 for Group 20, which includes the VAX 8200, 8300 and 8350; $60,000 for Group 30, which is made up of the VAX 8500, 8600 and 8700; and $80,000 for the VAX 8800s in Group 40.

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Vendors counterattack higher access charge

BY MITCH BETTS
CW STAFF

WASHINGTON, D.C. — Value-added network vendors are enlisting the help of their customers in a lobbying blitz aimed at killing a federal proposal to make the vendors pay higher access charges to connect with the local telephone network.

Telenet Communications Corp., for example, is meeting with its business customers to explain how the proposed access charges will raise prices and how to file written comments to the Federal Communications Commission, according to spokeswoman Claudia Houston.

The FCC recently issued a proposal that would eliminate the exemption from access charges currently enjoyed by so-called enhanced service providers, including vendors of data networks, electronic mail, remote computing and information retrieval services.

The proposal, which is subject to public comments before a final FCC vote, has raised a storm of protest from the affected vendors, whose costs may increase about $4 per hour.

"While there is dispute about the precise amount of additional access charges, the ruling could add more than $4 per hour to the costs that enhanced service providers incur in providing service, nearly doubling the cost in some circumstances," said a statement issued last week by Tymnet, McDonnell Douglas Network Systems Co. in San Jose, Calif.

"Of course, these charges would, to a large extent, have to be passed on to the business user," Tymnet said, adding that it is collecting information on the specific effects that the proposal would have on businesses, educational institutions and other organizations.

Supporters of the FCC proposal argued that enhanced service providers should not be exempt from paying their fair share of the cost of maintaining the local communications network.

The FCC said it provided a temporary exemption for enhanced service providers in 1983, when it first levied a local-access charge for long-distance carriers. Enhanced service providers "have had ample notice of the commission's ultimate intent to apply interstate access charges and ample opportunity to adjust their planning accordingly," the FCC said.

Warner Sinback, manager of telecommunications affairs for GE Information Services, a division of General Electric Co. in Rockville, Md., said that long-distance carrier MCI Communications Corp. has been goading the FCC to make the change, hoping it will add more revenue to the access-charge pool, thus cutting MCI's bill for access charges.

But Sinback said the total contribution of enhanced service providers would be minuscule — "a drop in the ocean" — amounting to a reduction of only one-tenth of a cent per minute in consumer long-distance bills.

Furthermore, he predicted that enhanced service providers will look for ways to bypass the local network to avoid the access charges.

Discrimination

ADAPSO, the computer software and services industry association, noted that the FCC proposal discriminates between remote computer service vendors, which are classified as enhanced service providers, and in-house data processing systems.

"Contrary to the FCC's apparent belief, a computer service vendor's use of the telephone network is indistinguishable from that of any other large user that operates an extensive voice or data network," said George T. DeBakey, ADAPSO's executive director.

Michael F. Cavanagh, executive director of the Electronic Mail Association, said the group is concerned about the effect of the cost increase on nonprofit and community-interest services operating on meager budgets. For example, a variety of on-line library and low-cost legal services would be jeopardized, he said.

The Videotex Industry Association said it will vigorously oppose the FCC proposal on the grounds that the access charges will make videotex too expensive for most consumers. "It will stunt the growth of videotex services," said Hilary Thomas, chairwoman of the group.

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AST announces 3270, PS/2 links

IRVINE, Calif. — AST Research, Inc. this week will announce two IBM 3270 terminal emulation cards and an Ethernet interface board for the IBM Personal Computer and Personal System/2 series.

The AST-Coax II and Coax IIA are AST's first in-house-designed micro-to-mainframe 3270 communications cards for the PC bus and the PS/2 Micro Channel architecture. Previously, AST sold CXI, Inc.'s Pcox board on an OEM basis for PC-to-host communications.

The boards, scheduled to be available in October for $895, are compatible with Digital Communications Associates, Inc.'s Irma series of micro-to-mainframe products. By using AST's high-speed bit-slice communications and coaxial 3270 protocol handler microprogrammable chip sets, the user will reportedly be able to upgrade the system firmware to support new terminal devices and protocols such as LU6.2.

In addition, AST said it plans to unveil for the PC and PS/2 an Ethernet local-area network interface card that will support the Xerox Network Systems protocol now and the Excelan, Inc. communications standard based on the Transmission Control Protocol/Internet Protocol in the future.

AST declined to elaborate on the Ethernet card, pending a formal announcement this week and an unveiling at the PC Expo Sept. 1 in New York. The board announcements reflect AST's desire to expand beyond its role as a memory and add-in board vendor and to establish a foothold in the PS/2 enhancement market.

Revamped Fusion tool unwrapped

BY KATHY CHIN LEONG
CW STAFF

OXNARD, Calif. — Network Research Corp. quietly began shipping a new version of its Fusion software for intervendor communications recently.

Release 3.2 of Fusion, which is due to be announced this week, adds network support for a much broader line of Digital Equipment Corp. computers, new electronic mail capabilities and remote communications features for Transmission Control Protocol/Internet Protocol (TCP/IP) users.

Fusion 3.2 now supports connections between DEC's Microvax 2000, Vaxstation 2000 and VAXBI bus series products as well as IBM Personal Computers and Motorola, Inc. 68000-based computers.

Previously, the product supported only the DEC Microvax II and the VAX-11/700 series. The Fusion family does not currently support IBM mainframe operating systems.

Officials said the new version of Fusion, which is priced between $3,000 and $9,000, will run 20% faster. The release supports up to four DEC Ethernet controllers simultaneously instead of one. Kathy Graham, Network Research's vice-president of sales, said the product will initially run under DEC's VMS operating system and should later support Microsoft Corp.'s MS-DOS and Unix.

Network Research also announced an R Commands option that it said allows TCP/IP users to issue remote commands with fewer keystrokes. With the option, a remote user on Computer A, for instance, can copy a file from Computer B to Computer C, a company spokeswoman explained.

R Commands is a series of Unix applications utilities compatible with the R Commands code originally developed at the University of California at Berkeley.

Fusion 3.2's electronic mail option features an on-line Help facility and commands that alert users at the exact time a message has been delivered and read. Both the mail and R Commands options will range from $100 to $2,250.

Users worldwide

Users of Network Research's new software release already include Nixdorf Computer AG, NEC Corp., Sandia National Laboratories and Mitre Corp.

Dave Robinson, technical staff member at Jet Propulsion Laboratories in Pasadena, Calif., said the latest version of Fusion supporting TCP/IP has successfully linked his department's Sun Microsystems, Inc. and Masscomp workstations under one network. Robinson said he uses the new version on his department's DEC VAX running VMS.

Analysts stressed that Fusion 3.2 will bring Network Research a step closer to DEC. The two companies are already working on a joint development project to write gateways between TCP/IP protocols and Open Systems Interconnect protocols for the National Bureau of Standards.

DG fights back with mid-range rollouts

BY JAMES CONNOLLY
CW STAFF

WESTBORO, Mass. — Data General Corp., battered recently by weak financial results and layoffs, fought back last week with the announcement of a pair of mid-range systems aimed at the departmental computing market.

The systems are faster versions of DG's year-old MV/7800 processor series and provide what the company claimed are performance gains of 45% or better.

DG announced the MV/7800 XP rack-mount system, which fills the same role as MV/7800 but with increased processing power, and the MV/7800 DCX, an office environment minicomputer designed to out-perform the MV/7800 DC.

Vies with VAX

The MV/7800 series competes with the lower half of Digital Equipment Corp.'a VAX 8000 series, which includes the VAX 8250, and the IBM 9370 family, which began shipments last month.

The performance gains were achieved by speeding up the single-board processor in DG's MicroMV chip set and with the use of faster memory chips, according to Gordon Haff, product manager for the MV/7800 line.

Haff said the new systems feature a cycle time of 220 nsec, compared with a 320-nsec cycle time in the older MV/7800s.

The 256M-bit memory chips used in the new systems have an access time of 65 nsec, compared with 100 nsec for the older chips, Haff said.

Using new technology

"Essentially, we took advantage of what we could do with the technology developed over the last six months or so to improve price/performance," he explained.

The older systems perform about 1 million instructions per second (MIPS) and will remain available.

The MV/7800 DCX and MV/7800 XP are rated at about 1.6 MIPS. The office version costs $33,300 with 2M bytes of memory and a 70M-byte disk drive. It supports up to 14M bytes of memory and 2.7G bytes of disk storage, according to DG.

Prices for the MV/7800 XP begin at $23,000. That system supports 14M bytes of memory and 9.4G bytes of disk storage.

Haff said upgrades from the older models are available for $9,000.

MV/7800 still available

DG said it will continue to offer the original MV/7800, which, like the MV/7800 XP, was originally designed to operate outside of an office environment such as a copier room or a controlled-environment computer room.

Haff said the MV/7800 DC was designed to support a maximum of 40 users and 20 to 35 active users in a typical environment.

The MV/7800 DCX supports a maximum of 80 users and 20 to 64 users in a typical environment.

Data General mid-range
Office offerings — then and now

	MV/7800 DC	MV/7800 DCX
Announced	*November 1986*	*August*
MIPS[1]	*1*	*1.6*
Cycle time	320 nsec	220 nsec
Memory range (in bytes)	2M to 14M	2M to 14M
Memory access time	100 nsec	65 nsec
Maximum users	40	80
Typical number of users	20 to 35	20 to 64
Disk capacity (in bytes)	2.7G	2.7G
Base price	$28,400	$33,300

[1] Million instructions per second

CW CHART

Xerox readies System/38 CIM package

BY JEAN S. BOZMAN
CW STAFF

CHICAGO — Xerox Computer Services, which has been an IBM value-added remarketer since 1983, will announce a computer-integrated manufacturing (CIM) package for the IBM System/38 on Sept. 1, a company official said recently.

While differing in some specifics, the package will perform the same functions on the System/38 as current Xerox Computer Services applications for the IBM 9370, creating a single, centralized data base of CIM information. The applications will be written to Xerox Computer Services' Exec/VS operating system, which has an interface to the System/38's CPF operating system, said Frank Lagattuta, president of Xerox Computer Services.

The System/38 announcement will be followed by another, more sweeping mainframe announcement in the first quarter of 1988, Lagattuta said, when Xerox Computer Services will unveil a CIM package written for IBM'a CICS, IMS and DB2 environments. "That product will provide automatic documentation of all the steps in the manufacturing process, from design to engineering to final production," he said.

"It will provide a common data dictionary and virtual device interfaces for factory-floor data from non-IBM devices, such as Hewlett-Packard Co. and Digital Equipment Corp. computers," he added. HP and DEC computers are prevalent throughout corporate America'a manufacturing plants, but, in many cases, have had trouble updating the IBM mainframe'a data base, he added.

The Xerox Computer Services software addresses job scheduling, manufacturing resource planning, finance, marketing and engineering. "All these applications are tied together through a central, active data dictionary and a single, shared enterprisewide data base," a Xerox Computer Services spokesman said.

IBM representatives will comarket the products, and "IBM will ship the hardware product and will assist in on-site preparation," Lagattuta said during a visit to Midwestern clients last week.

Although it is an off-the-shelf product, the new package will leave room for customization. "Large companies don't want an off-the-shelf packaged system," Lagattuta said. "They want a shell that gives them the methodology and the rules of the road. Then, they want to tailor it to their own manufacturing environment."

Supports most IBM systems

Once the System/38 and the IBM 3090 announcements have been made, Xerox Computer Services will support most IBM operating systems, including SSX, VM, DOS/VSE and MVS. The combination of software products will tie plant-floor, administrative and design/engineering applications into a single corporate CIM data base.

Lagattuta said Xerox Computer Services sees its role as one of a systems integrator, using its IBM-compatible systems interface as a leverage point in the CIM market.

Xerox Computer Services, which is based in Los Angeles with a staff of 600, has been selling IBM 4300-based CIM packages for four years. It has its own direct sales force and a marketing staff of 120. Lagattuta, who has been Xerox Computer Services' president since March, would not reveal the amount of revenue his division generates for its $10 billion parent company, Xerox Corp.

In the future, Xerox Computer Services will look for possible synergy with Xerox'a mainline printing business by addressing the manufacturing customer'a need to document engineering changes, Lagattuta said. Such costs have been estimated by industry consultants as a full 10% of the cost of manufacturing a product. "Our business fita very nicely with Xerox'a, because we understand the MIS environment," Lagattuta said.

Multiflow, Apollo in sales pact

BY ALAN ALPER
CW STAFF

NEW YORK — Multiflow Computer, Inc. and Apollo Computer, Inc. last week disclosed that they have entered a joint marketing agreement aimed initially at providing integrated networked computing products for the mechanical computer-aided design marketplace.

Under the agreement, Multiflow will offer its Trace family of minisupercomputers as compute servers for Apollo workstations. Both companies said they will provide personnel for the joint marketing initiative, which includes cooperative selling and mutual sales training.

Joseph Fisher, Multiflow'a executive vice-president, said the agreement with Apollo was in response to the need to off-load compute-intensive applications — or portions of applications — from technical workstations to higher performance processors.

The missing piece, he said, had been a way to provide transparent integration between workstations and higher performance minisupercomputers. Apollo'a distributed computing environment, called the Network Computing System, "provides a clear methodology to do this," Fisher said.

William Kelly, Apollo'a director of market development, said the agreement with Multiflow is part of a continuing effort to compete with IBM and Digital Equipment Corp., which both offer more extensive networking selections.

Interestingly, Apollo has an OEM agreement with Multiflow competitor Alliant Computer Systems Corp. Kelly said the two agreements are not conflicting and Apollo intends to work with both companies in the foreseeable future.

Both Kelly and Fisher said they expect the two companies to jointly explore other technical market segments, although neither would provide specifics.

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EDITORIAL

Finding its niche

The reverence for the company and its principals reaches almost maniacal proportions.

At the blossoming Macworld Expo last week, Apple Computer, Inc. aficionados tailed company executives in search of autographs. These are executives, not Olympic gold medal winners.

And the announcement of the Hypercard was greeted with a standing ovation — much the same style in which the Macintosh was greeted when it was unveiled in Boston three years ago.

There is clearly no other company in the computer business that has inspired and continues to inspire such a rabid following. Most of these Apple lovers inhabit the world of "hackerdom" and still look on the company as a $2 billion garage operation run exclusively by geniuses. But under John Sculley's direction, Apple is unfolding more elements of its corporate strategy, which heretofore had been a niche-penetration strategy.

One development to watch during the coming year will be the relationship between Apple and Digital Equipment Corp. There is great potential in that budding relationship, for, like Apple, DEC has inspired tremendous loyalty, if not outright snobbery, among its technical users.

In the most recent development between DEC and Apple, DEC announced it would cooperate on the development of a data base that runs on both VAXs and Macintoshes, a move heralded by Apple and others as a ringing endorsement of its graphics wunderkind.

Apple is certainly not waiting for others to forge a destiny beyond the home and hacker shop. The company will increase direct sales efforts in an attempt to gain access to what is far and away an IBM (or compatible) world and has hired a former dyed-in-the-wool IBMer to head its U.S. sales and marketing thrust.

All this is not to suggest that Apple is about to take the corporate world by storm. Quite the contrary; its image as a toolmaker for hobbyists and hackers has not scored many successes with the MIS powers that be. It is going to take a much more clearly defined and fully supported marketing strategy on Apple's part to even begin to convince corporate America that Apple is a safe bet. There are just too many people out there who believe in that often-heard quip, "You'll never get fired buying IBM."

However, the tremendous energy and enthusiasm that Apple is generating in the third-party software development community is certain to produce successive generations of products that more fully exploit the inherent genius of the Macintosh. The corporate market is pregnant with potential niches that such technology can exploit. In the role of the outgunned opponent in the corporate world, Apple will clearly follow several niche strategies simultaneously — of which desktop publishing has been the first. Apple may be a garage operation in some respects. But count on its corporate salesmen to be wearing three-piece suits.

LETTERS TO THE EDITOR

Not quite yet

While in general agreement with C. J. Date's article, "Twelve rules for a distributed data base" [CW, June 8], I strongly disagree with some statements. I believe that certain aspects of site autonomy contradict the "look like a nondistributed data base" rule and therefore do not represent the requirements for a distributed data base. Also, until a standardized interface that covers all aspects of distributed data base management is defined and supported by the various data base management system vendors, distributed data bases will only provide limited data access across heterogeneous DBMSs.

A distributed system should look exactly like a nondistributed system. To this goal, even administrators should see the distributed system as a seamless entity. Thus, the data base administrator should administer the data base as a whole, and the notions of security, integrity and storage management should be controlled by the data base administrator for the whole distributed data base.

Let us look at the issue of local control over storage management. If we allow a user to fragment a table across sites, who controls the storage for that table? What if a table needs to be replicated? In an ideal distributed data base, the system would decide on which site the data should be located, whether it should be fragmented, how many fragments should exist, whether a fragment should be migrated, etc. In fact, it would do so dynamically, based on data base activity. Even today, data base systems build indexes dynamically, if it is more efficient to do so.

In a distributed system, should there be local control over security? Authorization should be based on the data, rather than on its location. A user who has the authority to access data should be able to do so regardless of the location of the user to the data. In fact, that is what location transparency is all about.

Integrity of the data base also needs to be managed as a whole. In fact, it becomes all the more important in the case of a distributed data base.

I agree that sites should not be dependent on other sites to perform operations that could be performed locally. A data base should be as available as possible. If one disk is not available, a nondistributed data base should still function as well as possible. Similarly, if one site is not available, a distributed data base should still function as well as possible. It is the degree of functionality that is lost when parts of a system that need to be examined are unavailable.

The notion of local ownership and local management of data in a distributed data base is contradictory to the "look like a nondistributed data base" philosophy and is of little use. And until a standardized interface that is semantically rich enough for a distributed data base administration is defined and supported by various DBMS vendors, distributed data bases across heterogeneous DBMSs will not be really distributed.

Yogesh Gupta
San Jose, Calif.

This week in history

Aug. 15, 1977
IBM's Systems Network Architecture (SNA) cannot survive beyond the next few years, says Network Analysis Corp. President Howard Frank. Unless SNA capabilities are upgraded, it will be "the most archaic architecture around," and IBM's plan for it becoming the architecture of the 1980s is "virtually impossible," he adds.

Aug. 16, 1982
Researchers at the University of Illinois are working on an opto-electronic chip that could revolutionize the way processors are built. The chip will be about 10 times faster than those based on conventional silicon technology and offer potentially higher packing densities.

People problem

In "Computer insecurity" [CW, Aug. 3], Jack Bologna stated that the Equity Funding case was not detectable by normal audit methods.

That is incorrect. Account verifications had long been practiced for both accounts receivable and payable. The problem was that this was not normal practice for insurance policies. Now it is. Even at that time, the audits by insurance commissioners should have caught the fraud. The problem was that people were not using the techniques available rather than a lack of adequate techniques.

Theodore Willoughby
Professor of Management Information Systems
Indiana University Northwest
Gary, Ind.

Mind over muscle not always best tack

JOHN BARNES

"Work smarter, not harder" is very nearly the motto of the whole information processing industry. From us, it has spread out through the business world, and, until now, it is practically unchallenged as advice. Young people should do it to get ahead, old people to stay on top. Ambitious people should do it to get more done, workaholics so they can take more time off.

But for every proverb, as Philip Wylie pointed out, there's a converb. Many hands make light work, but too many cooks spoil the broth, for example. So — without throwing the baby out with the bathwater (but remembering that we might as well be hung for a sheep as a lamb) — here are a few cautionary notes, cases in which it makes more sense to "work hard" than to "work smart."

On a one-time job that's within existing capabilities. Be careful here, of course — a lot of great software has come from realizing that "everyone else has to do this by hand every month, too." But if the job is truly a one-time application — and would take only half a day to do by hand — then get away from that keyboard and get it done.

When everyone else is already working smart. If there is a single best way to accomplish a task, and you're using it, you can't beat your competition any way but by working harder. If you are making a state-of-the-art product — and so is everyone else, for about the same price — the only thing that will make the difference is more aggressive marketing and having your sales reps knock on more doors.

Similarly, if you are competing for a promotion, and your job is mostly carrying out other people's plans, whoever is in charge of design mainly needs fast turnaround and few errors. You get that by sitting down and getting it done and by being thorough about checking your work.

When the possible gains to working harder are larger. You can look this point up in your college microeconomics text under "marginal gains to efficiency." The idea is simple: If what you're turning out is falling in value and large blocks of time must be devoted to small gains in efficiency, you may well be better off working more intensively with existing technology.

For example, a technically mature product facing a saturated market will only move through heavy selling. In the same way, if the boss needs an answer and you can get one by brute force (at an acceptable cost) while other people are working for elegance — who gets the credit?

When you're close to a big success from working smart. This case is more important than all the others put together. The most brilliant stroke in the world won't pay off without an immediate follow-up — and the bigger the follow-up, the bigger the payoff.

Pearl Harbor was brilliant tactically — except that in the Japanese armed forces in 1941, there were no landing craft to follow up with. The carriers turned around and headed home.

If you've been in the computer industry five years, you can probably name 10 products that were the first of their kind and cannot be found on the market now. A big coup doesn't translate into success automatically. If you are working on it, chances are 20 other people have similar ideas. Furthermore, the day it is announced, 200 people will see ways your idea could be bettered, and they'll put 2,000 people to work on it. Meanwhile, two million will decide to wait for a later version with more features and fewer bugs. Your product dies, and somebody with a name like Macrohard or Incredibly Big Manufacturer picks up the pieces.

Unless you're ready to work hard. If you're as close to zero bugs as you can get, if you've got enough cash squeezed out of other operations to finance a big marketing drive, if you try to get the biggest share of the potential market you can possibly get before anyone else can get on the field, then the competition will simply be too late, and another giant is born. If you propose a project that management goes for, remember that the charm of new ideas lasts about one-tenth as long as the average popular song, in the absence of payoff. Once you've sold management on your idea, your troubles really start — something big had better happen soon.

Recently I talked to a friend who had returned from a year-long study of Japanese management techniques. He was not as impressed by what Japanese managers did as by how much they did. "Their big secret is that they have no secret," he said. "Anybody could be smart working that hard, that long."

Barnes is the Pacific Northwest area manager for ADG, a high-tech marketing organization based in San Pedro, Calif. His first novel, *The Man Who Pulled Down the Sky*, was recently published by Congdon & Weed.

Faster than a speeding molecule

Superconductors are the darling of science world despite practical limits

HARVEY NEWQUIST

Which of the following words does not belong in this group: Superman, superhero, supercharged, supercomputer, superfluous, supernatural, superimpose or superconductivity? If you picked Superman because he's not real, you're wrong. He's more real right now than superconductivity.

Perhaps you have read that superconductivity is going to change your life more than any scientific discovery since that the world is round. You've seen superconductivity splashed on the covers of business and technical journals. You've even seen it in *USA Today*. About the only place you haven't seen superconductivity is in a commercial product — and you won't, unless you can hold your breath for a very, very long time. Superconductivity refers to a technology that allows for efficient electrical conduction at temperatures that do not have to be cold enough to freeze the toes off the abominable snowman. Depending on what the electricity is passing through, it moves fairly rapidly or fairly sluggishly.

Dead in their tracks

Conductivity relates to how active the molecules in a specific material are. One of the best ways to stop molecules from stepping in front of a high-speed electrical current is to freeze them dead in their tracks.

Doing so is not as simple as dropping the temperature of the material to freezing as we know it — 32 degrees Fahrenheit or 0 Centigrade — because most molecules are still running rampant at that temperature. So we get into a realm of temperatures known as Kelvin. The Kelvin scale is based on the temperature at which all energy, activity and general random movement in molecules stops. Absolute Kelvin is the point at which all energy has been removed from a material. The exact temperature is equivalent to -273.15 C, which means that you really can't try this at home in your own freezer, which probably gets no colder than 26 F.

Once you slow down all molecular movement, electricity can race through a material about as freely as it pleases. There is one drawback: It is sort of tough to sell these great conducting materials as products when they have to be continually cooled at temperatures that would cause hell to freeze over.

But enter 1987 and the age of superconducting. Since March, hardly a week has gone by that someone has not heralded a new temperature breakthrough for superconductive materials. And though these breakthroughs have potential applications in everything from electromagnetically propelled trains to more efficient energy, the big advantage could be the use of superconductors in computers.

One of the major obstacles to faster computers is simply how fast electrical signals can be pumped through the machine itself. The faster it goes, however, the hotter it gets. It is this fact of science that has caused companies like Cray Research, Inc. to immerse their machines in various liquid baths of such chilled substances as Freon and nitrogen. Cooling the actual material helps the electricity to move without causing the computer to melt into large puddles of liquid silica.

Now think about using superconducting materials in such a situation. Electricity moves more freely in a less chilled environment, making the entire operating process more efficient and less reliant on applied cooling techniques.

Easy enough, right? Wrong. Many of the advancements in superconductive materials have been done with ceramics, which are notably nonmalleable and tend to be very brittle at temperatures currently associated with superconductivity — approximately 77 K to 95 K. And when you're dealing with something that is fairly brittle, you're not able to pump too much electricity through it or shape it the way you want without the danger of it crumbling. It is not as though you can replace semiconductors or the 3-foot-thick power coils at Hoover Dam with this stuff overnight.

Much of the work going on in superconducting is at MIT, Bell Labs and IBM. IBM can be credited with starting "superconductivity fever" with a series of well-timed press releases a few months ago. IBM has even been touting its ability to take superconducting material in the form of a plasma and spray it onto existing material to increase conductivity. But this spray does not occur in the same way as having your car cheaply spray-painted for $99. Until this summer, IBM's "spray" consisted of depositing superconducting plasma onto other materials *one atom at a time*. The company's researchers claim that they can now spray superconductors onto materials in particle sizes (you still can't see them without a microscope), which makes the whole process a lot faster. If I were thinking about improving the efficiency of the local utility company, or even a computer product line, applying molecular-size superconductors to an entire system would not be my idea of an increase in power and productivity.

CHRISTOPHER BING

MIT, on the other hand, is developing superconducting oxides out of rapidly cooled metals such as barium, copper and europium. These materials will conduct at the top of the scale, around 90 K. But think about it for a moment: This is still not a room-temperature operating environment. It's doubtful that you can go into a corporate DP center and expect to get this kind of incredible performance in electrical equipment without wearing a parka and sealskin boots.

So in terms of practical use, superconductivity is at least five years away — if even then.

Newquist writes and consults on artificial intelligence and other advanced high-technology topics from his office in Scottsdale, Ariz.

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SOFT TALK

John R. Vacca

MVS facing turf war?

IBM's MVS and its 6-year-old successor, MVS/XA, dominate the high end of information processing like no other operating systems in the 41-year history of commercial computing. Because of IBM's dominance in mainframes, billions of dollars worth of software has been written that is intimately tied to MVS.

Despite this seeming invincibility, there have been recent developments that might affect MVS's dominance in the next few years. Some IBM customers believe the MVS operating system will face competition from alternative operating systems. The one blip on the MVS horizon — so distant as to be barely discernable — is the rise of the specialty mainframe operating systems.

No one seriously expects any third-party vendor to go head to head with IBM in the operating system market. It has been difficult enough for Amdahl Corp. and National Advanced Systems Corp. (NAS) to survive as purveyors of IBM-compatible hardware. They get by because their machines run IBM object code; today's Amdahl or NAS user knows be can return to IBM tomorrow without being disrupted.

Continued on page 22

Users say Pacbase worth effort

BY ALAN ALPER
CW STAFF

PEARL RIVER, N.Y. — Three users of Pacbase, an application generator developed 15 years ago by CGI-Informatique in Paris, are finding that the system saves development time and maintenance costs, even if it is somewhat difficult to learn.

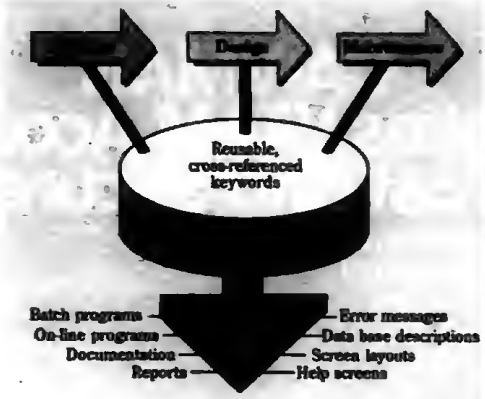
Marketed in the U.S. by CGI Systems, Inc., located here, the system is based on the Merise methodology, a structured programming technique popular in France. The system runs on IBM mainframes under DOS, DOS/VSE and MVS as well as on Honeywell, Inc. and Unisys Corp. large-scale systems. It supports most teleprocessing monitors and data base management systems, including IBM's DB2.

Pacbase is installed at 500 sites worldwide, including 90 in the U.S., the company notes. CGI has stepped up its U.S. presence, and its U.S. revenue is expected to exceed revenue derived from other countries this year for the first time. Worldwide revenue was $77 million last year, CGI says.

Pacbase has evolved from an

Continued on page 23

Pacbase
Development methodology



INFORMATION PROVIDED BY CGI SYSTEMS, INC.
CW CHART

Abend-Aid roots out abnormal ends

Compuware targets analysis, bug diagnostic tool at DB2 users

BIRMINGHAM, Mich. — Compuware Corp. announced last week enhanced functionality in Release S.2 of Abend-Aid, its 10-year-old analysis and debugging product, and a new product, Abend-Aid for IBM's DB2.

Abend-Aid analyzes the cause of abnormal ends to running applications and tells a programmer what happened and where as well as providing supporting data, Compuware spokesmen said.

Release S.2 provides diagnostic information that is specific to the language in use, including Cobol, PL/I, Fortran and assembler.

The "Next Sequential Instruction" displayed in earlier releases of Abend-Aid showed the initial statement leading to the error, which was "not necessarily the exact statement in error," Compuware spokesmen said. In Release 5.2, the statement containing the error is displayed, they said.

Continued on page 23

Spreadsheet, VAX data base see 20/20

BY CHARLES BABCOCK
CW STAFF

NATICK, Mass. — A bridge designed to link Access Technology, Inc.'s 20/20 spreadsheet users and Digital Equipment Corp. VAX data bases will be made available at the end of this month, according to Access spokesmen.

Access unveiled its 20/20 Database Connection at its annual users group meeting in Boston last week. The Database Connection works in conjunction with DEC's Datatrieve interface and DBMS data base management system and DEC's RDB relational DBMS and RMS file management system, according to Access Vice-President Carl F. Nelson.

The product was designed to move data into the spreadsheet without laborious data entry and to assist a spreadsheet user in formulating a query against the data base without specific knowledge of the data access lan-

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Inside

- **Oracle to launch QMF-compatible query and report writer. Page 24.**
- **Adesse adopts graduated pricing structure for its VM system software. Page 24.**
- **Hawkeye program bird-dogs RPG source code on System/38. Page 25.**

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MVS fight

FROM PAGE 21

"Virtually no MIS manager would bet his job on the proposition that someone could keep perfect pace with IBM's software," says Mike Kurka, systems analyst for Caterpillar, Inc.

That doesn't preclude niche competition, however, especially if IBM continues to raise its software prices. When IBM's price for MVS/XA or its successors becomes high enough to support someone else's research, development and marketing, someone else will undertake those tasks.

Several software houses are already calculating that price point and plotting preliminary strategies. In addition, Amdahl continues to work on its super-secret MVS-like Aspen operating system, which is widely believed to be a good development, if not a production, system.

Development under way

The only visible effort on this front is Key Logic, Inc., a Cupertino, Calif.-based start-up that has publicly acknowledged it is working on a transaction processing operating system for IBM mainframes.

Early benchmarks show that Key Logic's operating system supports as many as 500 transaction/sec. According to figures supplied by the Gartner Group, Inc. in Stamford, Conn., Tandem Computers, Inc. offers about 250 transaction/sec. and Stratus Computer, Inc. about 50; IBM's CICS peaks at 70 transaction/sec.

West Coast analysts predict that Key Logic will give IBM competition in the transaction processing market, but not everyone agrees. Other analysts say that the big problem is vendor viability. In short, users want to know how long Key Logic will be around. But users should note that the same concern was expressed about Tandem in 1974 and Stratus in 1980.

Will MVS dominate?

It appears, for now, that MVS will continue to remain the dominant operating system well into the 21st century. "However," says Fred Hill, principal systems programmer for Rohm & Haas Co. in Philadelphia, "it's all going to depend on IBM's continuing trend toward higher prices for MVS."

In most cases, IBM offers higher functionality in exchange for higher price. Ed Webb, senior systems programmer at Tangram Systems Corp. in Cary, N.C., says, "the definition of functionality may be about to change. In the past, the term meant software features, such as the extended addressing and support for new peripherals that differentiate MVS/XA from the less expensive MVS."

Based on previous IBM pricing actions at the low end of the 370 line, graduated pricing, along with functional changes, might push the cost of MVS/XA and its successors up from 11% of a customer's three-year opersting costs to as much as 39% over a period of years.

Whatever the effective price increase turns out to be — and the question is not whether but how much — it is clear that relatively higher MVS prices are on the way. If this is the case, then IBM will face stiff competition from its competitors and be in danger of watching MVS's position erode.

Analysts are unanimous in their estimate that IBM will strive to make more of its profits from software than hardware in the future. Only time will tell whether operating systems can remain one of the few software arenas in which IBM will face no effective competition.

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Pacbase

CONTINUED FROM PAGE 21

application generator to encompass a wide variety of life cycle development functions, spokesmen said. Developers using Pacbase create data specifications, which are stored in a central repository — or data dictionary — to generate Cobol programs, screen maps, data descriptions, documentation and reports.

Maintenance efforts are reduced because of Pacbase's active data dictionary, users report. Changes to the specifications within the data dictionary enable Pacbase to regenerate affected programs and update documentation and on-line Help messages.

The company is positioning Pacbase as a life cycle computer-aided software engineering (CASE) tool. "Generating full applications requires defining file data base blocks, accessing tables, creating error message files, Help facilities, user manuals and associated documentation," says Michael Blechar, director of product technology.

Ed Ackley, an analyst with International Data Corp. in Framingham, Mass., does not dispute Pacbase's utility, but says it does not fit under the ever-broadening CASE tool definition. "Pacbase is a fairly powerful product for code generation, but it is no 'soup-to-nuts' product," he says.

"That's something vendors would like users to believe, but I don't see it happening," he adds.

Credited with club's success

The Signature Group, a subsidiary of Montgomery Ward & Co. in Schaumberg, Ill., adopted Pacbase three years ago after deciding to expand its presence in the automotive and credit card club business. A more advanced club processing system was needed and the firm could not afford to wait the 30 man-years it would have taken using conventional Cobol programming methods.

"Management told us that we needed a strategic tool to build this system faster," recalls Bill Herwig, director of club marketing systems. "They told us to locate a tool that was cost-justified so we could chop off development time."

The company chose Pacbase, after making an initial decision to use Pansophic Systems, Inc.'s application generator Telon, primarily because of its built-in active data dictionary, Herwig says. "That was Reasons One through 10," he says.

Signature used Pacbase for detail design of its systems and code generation. Herwig says Pacbase was difficult for both neophytes and veteran Cobol programmers to learn initially, but eventually, most of his staff became comfortable with Pacbase procedures and command structure, he says.

"The first on-line, or batch, program was difficult, but after four or five programs all of my people loved it," Herwig remarks. After ascending the learning curve, Herwig estimates it takes programmers approximately one-fourth as long to write an on-line program with Pacbase as it does with Cobol.

General design of the credit club's system was completed in about one year. The system contains 161 on-line programs and 186 batch programs. The data dictionary contains 2,175 data elements, Herwig notes.

The system is stable, Herwig says, and has never transmitted any data exceptions. "Level of service is 97%," he says. "All on-line and batch reports are delivered on time."

The new methodology is working so well that Herwig has been able to reduce his in-house staff from 24 to 14. Only three staffers are devoted to maintenance; the others are working on new development, he points out.

Because of its increased capacity, Signature now does the processing for a variety of clubs managed by the Bankamerica Corp., Citicorp and The Chase Manhattan Bank NA. "We are accomplishing our goals," Herwig says.

Decreased maintenance time and costs were the primary reasons another user, Paul Revere Life Insurance Co., a Textron, Inc. subsidiary in Worcester, Mass., bought Pacbase in June 1986. At the time, the company was looking for an integrated development tool to remedy a major business problem — providing more efficient delivery of information to its employees and customers.

"Corporate gave us carte blanche to do what we wanted," notes Mark Saviate, director for systems development.

Paul Revere studied a variety of CASE tools but chose Pacbase because of its superior maintenance capabilities. "If the objective was to get a system developed faster, we probably wouldn't have picked it," Saviate says. "A lot of what we wanted to do was to take the existing system and change its specifications."

Paul Revere has a 10-year plan to migrate all existing applications to Pacbase, Saviate says. In adopting Pacbase, Saviate estimates that the firm would receive substantial cost savings. The product, he estimates, will pay for itself in slightly less than six years and will provide Paul Revere with a 41% return on its investment in later years.

Subsequent to the decision to use Pacbase, Paul Revere also opted for DB2 as its DBMS.

Adopting the technologies concurrently, while risky, is the only way to ensure consistency between the DB2 catalog and Pacbase dictionary.

"Our position was that either you wait for the train to stop or get on here," he says. "Our situation was not good, so we decided to take a chance and get on now."

The company has also recently begun to develop a new field agent compensation system using Pacbase to do all design and analytical work as well as code generation, Saviate says.

> "PACBASE IS A FAIRLY powerful product for code generation, but it is no 'soup-to-nuts' product."
>
> ED ACKLEY
> INTERNATIONAL DATA CORP.

Irving Trust Co. in New York recently completed three major applications using Pacbase for the development of a customer information system. At first, Irving thought it would use Pacbase on a limited basis in combination with traditional Cobol programming but soon found that programmers forgot the methodology.

"We found that we had better success when using Pacbase for the entire program," notes Edward Lipson, an assistant vice-president and Pacbase team leader at the bank.

When Irving first started using Pacbase in 1984, it took programmers almost six months to get familiar with it, Lipson says, noting that the translation of French documentation into English was less than satisfactory. With better documentation and CGI's U.S. consultants, "it now takes anywhere from four to eight weeks for people to get comfortable with it," he says. "When you're talking about up to 83 screens in an environment, some with very subtle differences, you can understand why," he adds.

The payoff

Although the firm lost six months in its schedule to teach programmers how to use Pacbase, it regained enough time using Pacbase to deliver an IMS application only one month behind schedule, Lipson says.

Another application that runs under CICS has processed 170,000 transactions a day since February. "We've experienced only one CICS storage violation in that time," Lipson notes.

Like Paul Revere, Irving cost-justified Pacbase on how much time and money would be saved on maintenance. The Pacbase team has reduced its support staff from the mid-teens to four, Lipson says.

Meanwhile, Lipson admits he did have some problems getting his programmers to adopt Pacbase's methodology. "It's a rigid structure; you just can't put things where you want. You have to put them where they fit in the structure," he says.

Abend-Aid

CONTINUED FROM PAGE 21

Release 5.2 is available immediately for $12,100 on the IBM 4361 and $30,100 on the IBM 3090 Model 400.

Abend-Aid for DB2 provides a diagnostic section for failed SQL statements, identifying the cause of error and suggesting courses of action. It also presents the SQL statement in error, the spokesmen said.

The product summarizes information on DB2 needed to resolve abnormal end problems in reports that are usually limited to two or three pages, minimizing the need for tedious dump searches, the spokesmen said.

Abend-Aid for DB2 is available immediately for $5,000 on the IBM 4361 and $10,500 on the 3090. After Sept. 30, the prices will increase to $6,500 and $14,000, respectively.

About 3,500 copies of Abend-Aid for IBM's OS/MVS operating systems have been licensed since the product was introduced in 1977, company officials said.

Oracle prepares contender to IBM's QMF

BELMONT, Calif. — Oracle Corp. recently said it would make available in the fourth quarter a query and report writer tool that is compatible with IBM's Query Management Facility (QMF).

IBM's QMF includes Query-by-Example and IBM's SQL data access language for use with DB2, its MVS mainframe relational data base management system.

Oracle's SQL-QMX was designed to work with the Oracle relational DBMS. Currently at beta-test sites, the product will be offered for the IBM MVS and VM operating systems, the Digital Equipment Corp. VAX and Microvax systems and IBM PC-DOS systems. It will also be offered for Intel Corp. 80286- and 80386-based microcomputers compatible with IBM systems.

'Path of least resistance'

"We are trying to find the path of least resistance for those users familiar with QMF," a company spokesman said.

SQL-QMX is said to provide additional features beyond the IBM offering, such as improved error checking and the ability to abbreviate commands; typing Sel instead of Select, for example.

It includes a Query-by-Example function that allows a user unfamiliar with SQL to invoke commands by responding to graphical depictions of commands, which are then automatically translated into SQL, the company said.

Oracle currently offers other tools to query its data base and generate reports, such as SQL-Forms and SQL-Plus, but they are not compatible with IBM's QMF, the company added.

Prices for IBM mainframes range from $7,200 for low-end processors to $32,400 for high-end systems.

A license for DEC hardware ranges from $1,800 for a Microvax to $28,800 for a high-end VAX 8978, a Vaxcluster arrangement with eight 8700s. An IBM Personal Computer license is $395.

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WHATEVER IT TAKES!

Adesse cuts VM software prices

DANBURY, Conn. — Adesse Corp. last week announced restructured pricing of its System Resource Management (SRM) software for the IBM VM operating system. The pricing corresponds with IBM's graduated pricing scheme.

Adesse's price change is similar to moves made in the last year by other VM system software vendors, such as VM Software, Inc. and VM Systems Group, Inc.

SRM, which had been priced at $60,000, now starts at $15,000 for a low-end processor, such as the IBM 9370 Model 20.

The software is used to allocate system resources. Those resources may be a particular program for a user or a guest operating system, such as MVS.

Adesse said it changed the SRM pricing because it wants to target the product at 9370 users and the $60,000 price tag was ton high for a departmental system.

When IBM lowered its software pricing for smaller processors late last year, it left many software vendors with overpriced software for the low-end hardware.

Without the price change in Adesse's case, for instance, it would have been selling a $60,000 product to low-end users who had paid as little as $28,200 for the one-time charge on the VM/IS Release 5 operating system.

Spreadsheet

CONTINUED FROM PAGE 21

guage. Working from a 20/20 spreadsheet, a user accesses the Database Connection from the Tools option on the spreadsheet command heading. Through the use of menu selections and prompts, the user builds a data base query with spreadsheet-style commands.

"We tried to maintain the spreadsheet metaphor as much as posible . . . It provides a much higher level of hand-holding than Datatrieve," Nelson said.

The product provides three choices in building a query, depending on the form of output desired and the user's knowledge of the data base query language. It enables either detailed or summarized data to be retrieved for selected records and fields.

"It sets up a spreadsheet based on the type of data coming in. All the formatting is done for you," Nelson said.

The user can view available data base files and fields through a window while still in the 20/20 spreadsheet.

The Database Connection is being offered as an add-on to 20/20 and is priced at 40% of the spreadsheet price, which depends on processor size, said Jay B. Yesselman, 20/20 product manager.

20/20 sells for $12,500 on the VAX 8800, with the Database Connection priced at $5,000. 20/20 sells for $2,800 on the Microvax. The Database Connection is priced at $1,200.

Yesselman said the bridge was the most frequently requested enhancement at the firm's annual users group meeting last year, and was not on Access Technology's development priority list at that time.

NEW PRODUCTS

Systems software

A process-management software system that runs on Digital Equipment Corp. VAX computers has been announced by **Weyerhaeuser Information Systems.**

Prosmart is said to incorporate a data base with modeling, graphics and trend software tools. It provides validated real-time data for process monitoring, planning, scheduling and analysis; cost data; and lab data for quality tracking. According to the vendor, Prosmart can also provide financial data.

Other features include the ability to display four windows simultaneously and to simulate processes and show the results of modifying individual variables in the process.

Prosmart is priced from $100,000 to $200,000.

Weyerhaeuser Information Systems, Tacoma, Wash. 98477.

A decision-support software system designed for users of IBM System/36 and 38 computers has been announced by **System Software Associates, Inc.**

The **BPCS Decision Support System** was designed as an integrated part of the vendor's Business Planning and Control System (BPCS) but can also be operated independently, the vendor said.

The system features a business modeling module that integrates with the System/36 and 38's data base files. Users can access System/38 data base information from up to 15 files at once and output the information in reports, on-line graphs or file interfaces.

The system is priced from $15,000 to $20,000.

System Software Associates, 200 W. Madison St., Chicago, Ill. 60606.

Applications packages

Tesseract Corp. has added the **Investment Plan Management** software to its Benefit Plan Administration System.

The software is an on-line, real-time system that integrates with the vendor's Personnel Management System to avoid the redundant storage of such employee data as name, birth date, address, Social Security number and status.

Investment Plan Management contains two data base segments: Enrollment/Allocation and Transaction for processing fund elections and transaction activities, tracking contributions and withdrawals and fund transfers.

The Investment Plan Management software system costs from $100,000.

Tesseract, P.O. Box 7658, 150 Spear St., San Francisco, Calif., 94120.

Software for editing large-format, high-resolution raster images on Sun Microsystems, Inc.'a Sun 3, Apollo Computer, Inc.'a Domain or IBM Personal Computer workstations has been announced by **Ana Tech Corp.**

The **Raster Edit** package edits any size document up to 60 in. wide by roll length at resolutions from 1 to 1,600 line/in. Edited raster data can be stored in the existing edited format, converted to compaction formats or converted to vector format for further editing.

Raster Edit features such capabilities as scaling and rotating of objects, cut and paste, ASCII text placement, pan and zoom, flyspeck removal and hole fill, polygon fill or erase, addition of polylines, arcs, circles and ellipses and extracting or merging of several files.

Raster Edit is priced from $750 per workstation.

Ana Tech, 10499 Bradford Road, Littleton, Colo. 80127.

Utilities

Softran Corp. has announced **C-Tran** and **C-Run**, tools for porting application software written in Cadol II, the operating system and programming language of Contel Computer Systems Corp.'a Cado computers, to systems running variations of AT&T's Unix System V operating system.

C-Tran is a software translation program written in C that accepts Cadol II source code input and generates C source code output. C-Run is a runtime library of C programs that performs the data base management and terminal handling functions of Cadol.

According to the vendor, the translated programs are executed, not interpreted.

Per CPU, C-Tran costs $4,000; C-Run costs from $750 to $1,500.

Softran, One Naperville Plaza, Naperville, Ill. 60540.

Services

A program to retrieve RPG source code from compiled objects on the IBM System/38 has been announced by **Hawkeye Information Systems.**

The program, **Golden Retriever**, produces RPG II and RPG III source code, including statement numbers, field and file names, variables and constants. The retrieving process utilizes a System/38 assembler program to analyze the object's symbol tables.

The service costs 50 cents per line of code restored, with a minimum of $500.

Hawkeye Information Systems, Bloomfield Industrial Park, 13139 Bloomfield St., Sherman Oaks, Calif. 91423.

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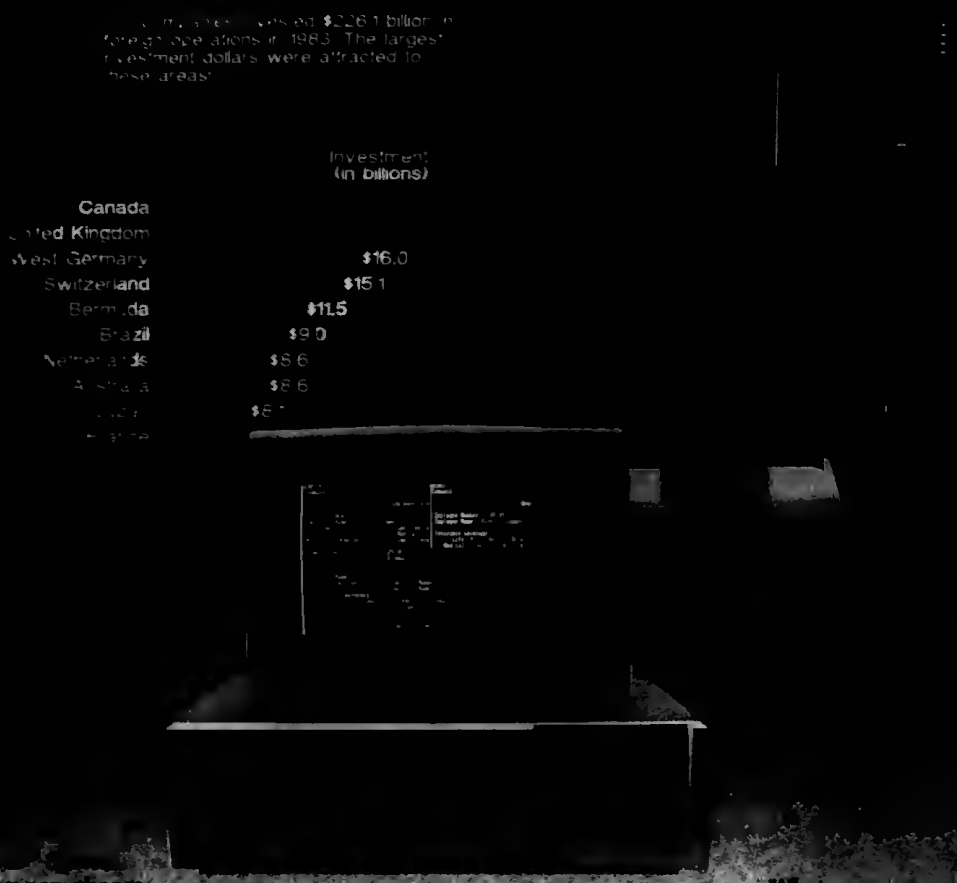

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MICROCOMPUTING

SMALL TALK

William Zachmann

Underware's handy Brief

A friend from Microsoft Corp. was recently showing me a pre-release version of a product his company will introduce this fall. We put it up on a micro in my office. Since it was my system, I was at the keyboard installing the program.

At one point, we needed to modify my CONFIG.SYS file. I started to use the EDLIN editor that comes with Microsoft's MS-DOS. My friend was astonished. "You mean you use EDLIN on text files?" he asked.

"Yes," I replied sheepishly. "Why, what should I use?"

I was, of course, intimidated by the question. I could tell from the way he said it that there must be a better way. But what? After all, didn't Microsoft write EDLIN and package it with MS-DOS in the first place? Maybe he thought I ought to be using Microsoft Word. Or was there a nifty new Microsoft text editor I'd somehow not heard about?

"Well," he replied, "nearly everybody I know uses Brief. You must have heard of it."

Brief? "Er . . . ah . . . no," I

Continued on page 35

DOS comes to the Mac

Boards, software bridge gap — at a price

BY JULIE PITTA
CW STAFF

Breaking IBM's tight grip on the corporate market has proven to be an uphill battle for Apple Computer, Inc. However, soon-to-be-available devices allowing Apple's Macintosh to run IBM's PC-DOS and Microsoft Corp.'s MS-DOS should aid in removing one barrier between Apple and the corporate user.

AST Research, Inc., a third-party developer, is scheduled to ship this fall two products allowing the Macintosh to run PC- and MS-DOS. Slated for shipment next month, the Mac 286 is an MS-DOS coprocessor priced at $1,595 and was designed for use with the Macintosh II.

Following that product will be the Mac 86, priced at $599, an Intel Corp. 8086-based coprocessor scheduled for shipment in November. The Mac 86 was designed for use with the Macintosh SE.

Both boards require Apple's external 5¼-in. floppy disk drive, priced at an additional $399.

Another third-party developer, Insignia Solutions, Inc., will reportedly offer software bridging the gap between the Macintosh and PC- and MS-DOS worlds. The San Francisco-based start-up is set to introduce its first product, Soft PC, a software package allowing the Macintosh II to run MS-DOS,

Continued on page 34

Data View

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CW CHART

Users' rep ranks PC vendors, decries Lotus copy protection

At 5,200 members strong, the Capital PC User Group, Inc., located near Washington, D.C., is a powerful entity that, at times, helps shape the industry it watches so closely. The all-volunteer, nonprofit educational and support organization for users of IBM Personal Computers and compatibles holds monthly meetings and publishes a monthly newsletter.

On Sept. 9-10, the group will sponsor its first educational forum for users in the Washington area — The Capital Microcomputer Users' Forum.

Jerry Schneider, president of the Bethesda, Md.-based group, recently discussed his favorite companies in the industry, his fight against copy protection and more with *Computerworld* staff writer Alan J. Ryan.

Jerry Schneider

What software vendor companies are the easiest to get along with?

Microsoft Corp. has to be fairly high on my list. I've found they are very accessible and very understanding. They're one of the better companies out there in terms of product upgrades in both the cost and the timeliness.

Any others?

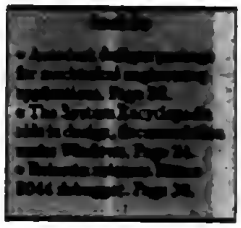
The worst is IBM. IBM, when it comes to software, you can kiss good-bye. I wouldn't buy any IBM software. They have no software support whatsoever. Computer Associates International, Inc., which has Supercalc, is also a very good company to deal with. In many cases, Borland International, Inc. is, too.

What about hardware companies?

As far as video boards, the Video-7, Inc. people have always been superb to deal with. I've known of a number of cases where someone has purchased a product, and they came out with an upgrade. The person called them and they went ahead and sent the upgrade even though they had no obligation to.

Compaq Computer Corp. is another company that is good to do business with. A good exam-

Continued on page 35



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Autodesk targets mechanical design

Package helps engineers lay out buildings' internal systems

SAUSALITO, Calif. — Autodesk, Inc., a leading supplier of computer-aided design (CAD) software, recently released a $500 package intended to help mechanical engineers lay out the inner workings of a building — from the design of heating systems to the placement of fire alarms.

Autocad AEC Mechanical features a template that speeds up mechanical design by automatically laying out a variety of building equipment, including ventilation and air-conditioning units; pipes and air ducts; and control and metering devices.

The template speaks the same language as mechanical engineers by using a series of icons that are standards in the engineering industry, according to Autodesk.

Runs on IBM PCs

The program is an add-on to Autodesk's Autocad, a general-purpose CAD package. Designed for the architecture, engineering and construction (AEC) markets, the product runs on IBM's Personal Computer, PC XT and AT as well as compatible machines.

"It's an efficiency tool that will increase the productivity of a mechanical engineer who works in an architectural firm," said Keven Seaver, an Autodesk representative.

The vendor has already tried to lessen the burden of general architects with its $1,000 Autocad AEC Architectural, which is a building design tool that started shipping in June 1986.

Takes the floor

The new package can use floor plans generated by its predecessor as the basis for mechanical systems diagrams.

Autocad AEC Mechanical includes an interface to third-party duct-analysis software.

It also requires Autodesk's Advanced Drafting Extensions-3.

VMWORD is a full screen Word Processor for secretaries, managers or engineers who need to prepare documents under VM, but don't necessarily have VM experience.

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Laptop holds two full-size PC XT cards

FREMONT, Calif. — Grid Systems Corp. last week introduced a 15-pound laptop computer that allows the use of two full-size IBM Personal Computer XT-compatible expansion cards.

Called Gridcase EXP, the system caters to users who require a portable machine with expansion cards, such as engineers. It also targets those whose applications demand an expansion card for communications, according to marketing manager Ed Murphy.

"Many of the people who are most directly in line to really make a contribution to a company's revenue stream are people who work in the field," Murphy said.

"Workers in the field have often been excluded from the technology in the office," he added.

Card makers eyed

Other potential users are manufacturers of XT expansion cards that can use the unit to demonstrate their cards to prospective clients, Murphy added.

The XT-compatible laptop, priced at $4,640, features a magnesium case and includes 640K bytes of random-access memory (RAM), a single 3½-in. floppy disk drive, RS-232 and Centronics Data Computer Corp. ports and a supertwist LCD.

Options include a 20M-byte internal hard disk for $1,175, a 300/1,200/2,400 bit/sec. modem that starts in price at $595, a gas plasma display that costs $530 and 1M byte of Lotus/Intel/Microsoft Expanded Memory Specification RAM priced at $395.

For those analyzing developments in the PC industry, Compaq offers an executive summary.

Compaq still

In the midst of the clamor surrounding the new IBM® PS/2 series of personal computers, one thing is perfectly clear to people who really know PC's. COMPAQ® personal computers still work better. They're faster, more compatible, more expandable, and more flexible to accommodate the advancements so many users demand.

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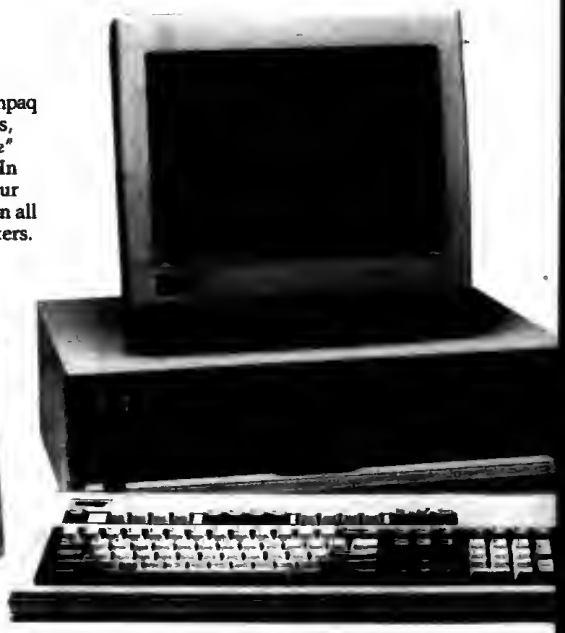

Demand for the 12-MHz COMPAQ DESKPRO 286 has nearly doubled since the PS/2 introduction.

The 12-MHz COMPAQ PORTABLE III is the smallest, most powerful full-function portable there is.

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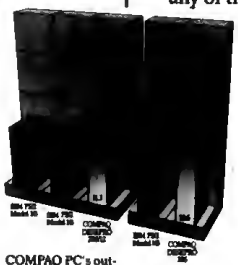

COMPAQ PC's outperform PS/2 PC's in tests for processor speed & disk performance, using the Norton Performance Index Version 4.0.*

Finally, compare portability. You can't. The 12-MHz 80286-based COMPAQ PORTABLE III™ is the undisputed leader. It offers all the functions and performance you'd expect to find in the most advanced desktops. Without any of the compromises you'll find in other portables.

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*Index based on a scale that rates the original IBM PC as 1.00

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The industry standard has a lot going for it. Namely, you and over 10 million other PC users it represents. American business has $80 billion invested in the current PC standard, including 40 million software packages, 32 million peripheral products, and bundreds of millions of hours in training. Compaq designs its computers to protect your investment. And because they do more, they also maximize it.

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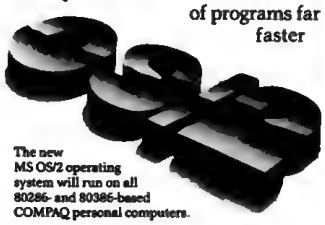
Compaq has become famous for its legendary compatibility and connectivity. Our PC's will run thousands of programs far faster

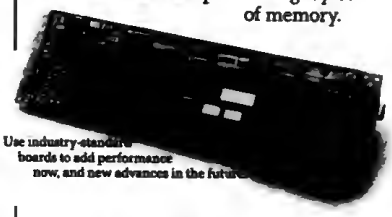


The new MS OS/2 operating system will run on all 80286- and 80386-based COMPAQ personal computers.

than other computers. All the popular programs, including Lotus® 1-2-3,® dBASE III PLUS,® Microsoft® Word, Sympbony,® and Paradox,® to name just a few. Without modification.

Furthermore, you can insert the 5¼" diskettes your COMPAQ computers use into all the other compatible computers in your office, without time-consuming diskette conversions.

But our definition of compatibility looks to the future as well. For example, all 80286- and 80386-powered COMPAQ personal computers will run the new MS OS/2 operating system, allowing you to break the 640-Kbyte memory harrier and directly access up to 16 megabytes of memory.



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Software tracks Windows programming efforts

BY JEAN S. BOZMAN
CW STAFF

SCHAUMBURG, Ill. — A new way to design and document programs under Microsoft Corp.'s Windows environment has been developed by two Chicago-area consultants who wrote the code by night in their garage and consulted with local Fortune 500 firms by day.

Called The System Encyclopedia, the program was developed by Frank McGuff and Philip Piotrowski, who together started a software concern called MP&G Research, Inc. The two former A. B. Dick Co. software engineers said they are planning to distribute the program in September, after a series of beta-site tests at Nutrasweet, Inc. in Skokie, Ill., and Beatrice Companies, Inc. in Chicago.

The program allows programmers to call up sections of code in a series of icons and pull-down menus provided by the Windows environment.

The current version of The System Encyclopedia runs under Windows 1.3. Even on a Compaq Computer Corp. portable computer, the program has an Apple Computer, Inc. Macintosh-like look and feel because of its graphics interface and mouse, the developers said.

After leading the user through a series of fill-in-the-blank prompts, the program churns out documentation for the program being developed. It is said to enable users to trace any element of their program and to show where each data attribute is used within a data base.

Multilevel management

"It's the central repository for everything you're developing," McGuff said. "It enhances programmer productivity by managing system specifications and documentation at the management, user and the technical levels."

The categories that can be defined include attributes, reports, processes, batch jobs, menus, views and entity relations.

The purpose of The System Encyclopedia is to maintain a record of how a given program was developed, so that as programming staffers leave their companies, those who take their places can provide consistent software support.

While productivity should increase, Piotrowski said he does not believe in the hard sell.

"We won't try to convince you that using The System Encyclopedia will triple your system builder productivity or reduce your development backlog to zero," he said. "Developing computer applications is very hard work. There is no magic involved."

Piotrowski and McGuff said they plan to modify the product once IBM ships its OS/2 operating system.

For now, users are prompted to fill in boxes with information about fields, data types and the like. Once OS/2 is shipped, however, The System Encyclopedia program will adapt to it, they said.

Graphic future

"We feel our users will be very comfortable with a data entry technique," McGuff said. "But, when IBM's Presentation Manager comes along, we'll move to a more graphic approach than we have now."

Since The System Encyclopedia resembles a computer-aided software engineering tool, it will document any program, regardless of the operating system under which the program will eventually run, the developers said.

The System Encyclopedia was programmed using the C language, but it runs under Microsoft's MS-DOS.

The System Encyclopedia is priced at $1,295, which includes a mouse, software and Microsoft's Windows. Volume discounts and site licensing are available, the developers said.

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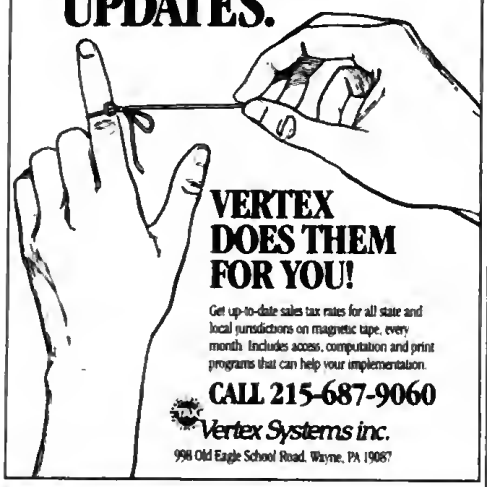

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DOS

FROM PAGE 29

sources said.

The program allows the Macintosh to emulate an IBM Personal Computer XT, those familiar with the package said. The price of the package is expected to be $595. It will be sold by software distributor Softsel Computer Products, Inc. as well as by Apple, sources said. The Insignia package also requires Apple's 5¼-in. external floppy disk drive.

These solutions may appeal most to corporate users seeking to overcome an IBM-only mindset at their companies.

"The corporate world is predominantly a DOS environment," said Peter Teige, a Dataquest, Inc. analyst. "For the coexistence of the Mac in the DOS world, these devices would be an advantage. The promise of the open Mac is that it can run DOS.

"The ability to run DOS would be important to the corporate users reluctant to buy a Macintosh because IBM is predominant in the company," Teige said. "This gives you the loophole to go with the Mac."

Current Macintosh users probably won't flock to either the AST boards or the Insignia package, Teige conceded. "If they've already purchased the Mac, DOS obviously didn't matter to them anyway," he explained.

A political issue

Jeff Ehrlich, manager of product technology at General Electric Co., said corporate users may use the devices to get around company buying restrictions specifying the purchase of IBM-compatible equipment only.

"The issue with these devices is as much political as it is technological," Erlich said. "There will be some people who will buy them because they have that technology need, but there are others who will buy them only to get around certain corporate buying guidelines. If it runs DOS, you can claim it's a clone, and that's that.

"It negates any argument that anyone might have against Apple," he continued. "That's a very real consideration in the corporate environment."

Cost for both the AST boards and the Insignia Soft PC may prove to be a deterrent to some corporate users. Users who have tested the AST boards also complained of mediocre performance.

"They aren't cheap," said Aaron Goldberg, vice-president of microcomputer services at International Data Corp. "For not a lot more money, you can buy a mail-order XT."

Goldberg said there may be some need for Mac PC- and MS-DOS devices from users with space constraints. However, that demand is not expected to be great, he added.

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Users' rep

FROM PAGE 29

ple is how they handled the fact that purchasers of their early Deskpro 386s didn't have a slot for an [Intel Corp.] 80387. Basically, the way they decided to handle the situation is if you order a 387, for the price of the 387 they'll give you a whole new motherboard.

That brings me to Intel, which recently discovered the problem they had during production of the 80386. Rather than wait for someone else to bring it up, they went public with it.

People can understand bugs in software and production problems or problems with hardware. What they can't understand is people trying to stonewall it and pretend it doesn't exist.

What kinds of useful programs do these vendors have for users?

To me, support programs one way or another have to meet user needs. They can't be restricted.

To me, the best support program is a Chinese [restaurant] menu — that's when you go out to your user, you can more or less pick and choose and then pay according to what you need, because every user needs something different.

One company that is really great as far as support is the Wordperfect Corp. group. They have toll-free lines; they are very accessible.

Do you see any up-and-coming stars? Someone who's going to make an impact on the personal computer industry?

I don't think [they're] ever going to become a Microsoft, but there's a company in this area called Qualitas, Inc. They came out with a product called "386 to the Max," which is just shipping. Basically, it's a memory manager for the 386. The way [Qualitas] is putting it together, it can almost be a foundation for anything running under 386.

You've done a lot of work in the area of copy protection. What is still missing in that area that you'd like to see?

Lotus remove copy protection. Period.

Lotus Development Corp. is basically the only one in the way of total industry acceptance. We're primarily talking about what I call business-, professional- and home use-type software. I'm not addressing entertainment software. Copy protection is a nuisance, it is a disruption and it causes far more problems for the user than it ever solves for the vendor. It's going to be increasingly more of a problem under PS/2 with the new disk media.

What do you think about Microsoft's MS OS/2?

I like it. I'm very impressed. I've been using it for about three months, and I think Microsoft has done a really good job. MS OS/2 is a very complex system, but the complexity is at the developer's level.

What are users saying about IBM's Personal System/2?

The PS/2s, particularly the Micro Channel, [Model] 50s on up, are excellent machines, and I strongly believe that they are the next generation — or at least something similar to them is the next generation — of computing. I believe in the 3½-in. media; the Video Graphics Array as a new graphics standard is good, and a number of the features that exist in the Micro Channel architecture, I think, are the right features. Things like the fact that the computer will handle multiple microprocessors will be very critical in the future.

But the problem with the PS/2s, or at least user acceptance of them, is the PS/2 is a machine that's being offered now for the future — and many people don't have an immediate need for the future.

How do you feel users groups can influence vendors?

From a vendor's perspective, they provide a forum for presentation of a product or technology.

In addition, I think more people are getting questions answered and getting some detailed information on products through user group help lines than you're ever going to get at a dealer or anywhere else — except maybe with a one-on-one session with a technical support person at a software publishing house.

Underware

FROM PAGE 29

admitted, "I must have missed that one."

"Oh," he replied, "you've got to get a copy. It's fantastic. It's published by Solution Systems, but the guys who developed it have a company called Underware, Inc. right here in Boston. I can't believe you haven't heard of it."

Needless to say, no sooner had my friend left my office than I was on the phone checking with directory assistance to get the number for Underware. When someone from Microsoft tells me somebody else has a great product, I know I'm on to something.

A tour de force

As it turns out, Brief 2.0 is not only the best programmer's text editor I've ever seen, but it is also a tour de force in the way it was conceived and implemented.

For starters, Brief offers a very handy full-screen text editor. With an IBM Enhanced Graphics Adapter display, a user can have 40 lines of text.

The program provides a very clean display with the file name you are working on at the top of the page, a message area, line and column indicators, mode indicators and the time on the line below the bottom border. The directional keys — Tab, Backspace and so forth — all work as you would expect.

All these are just the basics, however.

There are many features lurking behind Brief's deceptively simple exterior. For instance, you can easily work on multiple files simultaneously. The program sets up buffers in memory for as many files as you could possibly keep track of.

Pressing Alt-B pops up a buffer list with the names of the files currently handled in memory. You can choose the file you want to edit from the buffer list. You can also cycle through the files in the buffer list by simply pressing Alt-N. You can also add or delete files from the buffer list.

> WHEN SOMEONE from Microsoft tells me somebody else has a great product, I know I'm on to something.

In addition, you can create and size multiple editing windows with Brief. You can then edit different files from the buffer list, different parts of the same file or any combination thereof in as many windows as you want.

Brief has an extremely powerful search-and-translate facility. It's pattern-matching facilities go far beyond the basic "?" any-character marker and the "*" any-character marker of DOS. For example, you can search for any string of zeros ending in a one (e.g. 01, 00000001) or for any uppercase vowel.

The program also has a multistep Undo feature that lets you step back through an arbitrary number of editing steps. That is, you can undo not only the last thing you did but also the last 50 — or more if you prefer — things you did.

Being a text editor, Brief does not normally do word processing functions like centering text or word wrap.

Perhaps most impressive of all, and most useful for programmers, Brief can be set up to provide "smart indentation."

It comes with a template file for the C language that automatically provides correct indentation for If, Else, While, For, Switch, Case and Do . . . While clauses.

Speaks the language

Brief has an extremely powerful macro language that can be used to create new commands, modify existing commands, tailor the program to any programming language and create an initial setup to suit the user in almost any situation.

Brief comes with excellent documentation, an on-line Help facility and one of the most intelligently designed setup routines I've ever seen.

All said, Brief is worth every penny of its $195 list price. It is available through dealers, companies selling direct to businesses or from Solution Systems in Weymouth, Mass.

Zachmann is vice-president of research at International Data Corp.

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NEW PRODUCTS

Systems

An IBM Personal Computer AT-compatible workstation measuring 14 by 16 by 4.88 in. has been announced by **IDR, Inc.**, a Reuter Company.

The **IDR 386 Workstation**, based on Intel Corp.'s 80386, offers 16-MHz operation and 32-bit data and address bus architecture. Featuring a single-board construction, the workstation comes standard with integral BIOS, 2M bytes of expandable on-board dynamic random-access memory and two RS-232C serial ports.

The IDR 386 workstation is being marketed to OEMs and value-added resellers. It costs $4,495.

IDR, 370 Vanderbilt Motor Pkwy., Hauppauge, N.Y. 11788.

Software utilities

A software development tool set for use in conjunction with Innovative Software, Inc.'s Smart Integrated System has been introduced by **Amalon Industries, Inc.**

Smart System Services includes a library of pretested, generic project files necessary to build an application, along with a methodology for putting them together. Features include multiple menu pages, data entry validation mode, automatic message justification support, variable display window positions and a project-writer facility that builds the project source code to execute each of the Smart System Services' calls.

Smart System Services is priced at $119.

Amalon Industries, Suite 3C, 725 W. Commerce St., Gilbert, Ariz. 85234.

Development tools

Bbug, a Bitbus 8044 debugger designed for verification of 8044 assembly language programs, has been announced by **Robanks, Inc.**

Bbug is said to use Bitbus as the communication channel for the debugger. It automatically determines the number of programs to create, where the programs start, the priorities of the programs and which register bank each program uses. A built-in 8044 disassembler puts 8044 instructions on the screen and automatically translates relative offset branching addresses and displays them as actual address locations.

Bbug is priced at $595.

Robanks, P.O. Box 493, Banks, Ore. 97106.

Software enhancements

Microsoft Corp. has announced **Microsoft Cobol Compiler Version 2.2** in both Microsoft MS-DOS and Xenix versions.

The compiler now comes with Microsoft Cobol Tools, a set of development tools and utilities including a symbolic debugger, cross-reference generator, menu handler and mouse utility.

Microsoft Cobol Compiler users may choose from four different file structures including indexed sequential-access method, sequential, line sequential and relative.

The Cobol Compiler for MS-DOS costs $700. The Xenix version costs $995.

Microsoft, Box 97017, 16011 N.E. 36th Way, Redmond, Wash. 98073.

NEW AT MACWORLD

Centram Systems West, Inc. has added a laserwriter spooler and a data translation application to the Apple Computer, Inc. Macintosh version of its **TOPS Network**. The enhanced version of TOPS for Macintosh costs $189. Centram, Suite 220, 2560 Ninth St., Berkeley, Calif. 94710.

Flowmaster, an advertising media full-color flowchart package written specifically for the Macintosh has been announced by **Select Micro Systems, Inc.** Flowmaster costs $495. Select Micro Systems, Suite 211, 40 Triangle Center, Yorktown Heights, N.Y. 10598.

Superglue, software that allows users to reduce or enlarge and then print to disk the graphics output from most Macintosh applications, has been announced by **Solutions International**. Superglue costs $89.95. Solutions, P.O. Box 989, 29 Main St., Montpelier, Vt. 05602.

The **Personal Laserprinter**, designed for use with the Macintosh Plus, Macintosh SE and Macintosh II and offering 300 dot/in. text and graphics output, was announced by **General Computer Corp.** It costs $2,599. General Computer, 215 First St., Cambridge, Mass. 02142.

Human Intellect Systems announced its **Instant-Expert Plus** expert system shell application development tool for the Macintosh. It costs $498. Human Intellect, Suite 326, 1670 S. Amphlett Blvd., San Mateo, Calif. 94402.

A multiuser optical disk server for Macintoshes designed for use with the vendor's **Multi-User Archival and Retrieval System** (MARS), was announced by **Micro Dynamics, Ltd.** The server site license fee for MARS software is $15,000. Micro Dynamics, Suite 802, 855 Sixteenth St., Silver Spring, Md. 20910.

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For instance, we can help complement your host systems by one or more subsidiary distributed systems. By breaking down a problem into meaningful parts, our system permits departmental data capture, which makes you faster and more productive, and your data more valuable to management. Our 8850 distributed system drastically reduces the cost of providing high-level information, saving more than enough to justify the expense of installing the system.

Nixdorf's commitment to the data entry marketplace is well-known. More than 70% of Nixdorf Computer Corporation's business is in data entry. We are working to ensure that our data entry technology keeps pace with the growing demands that are being made on it, and on you.

Which is why we're working on changing your sign.

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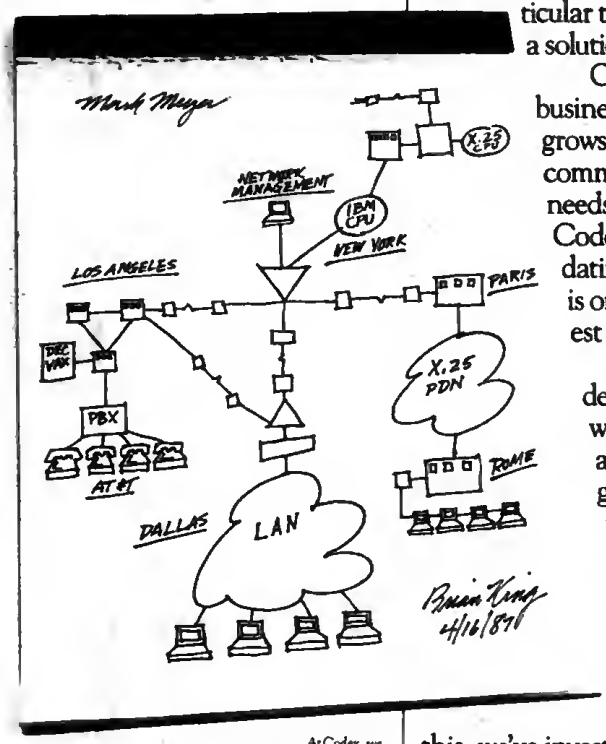
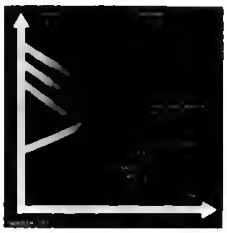


At Codex, we don't have set solutions – we work with your current environment. Which is why we spend a lot of time drawing diagrams like this.

And since our capabilities include everything from all types of transmission devices to gateways to network management systems, we're never trying to force fit a particular technology into a solution.



We can show you how a Codex network can be more profitable and more productive for your company.

Of course, as your business changes and grows so will your communications needs. And, at Codex, accommodating that growth is one of our highest priorities.

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NETWORKING

DATA STREAM

Elisabeth Horwitt

More change to come

"May you live in interesting times" is a curse reserved for your favorite enemy, according to some Oriental philosophers. Right now, we are in the midst of major developments that could drastically change not only how computers interact but also how companies do business. MIS departments tend to suffer at times like these, since technologies and major vendors keep changing direction in midstream, leaving many companies stuck with obsolete equipment — and MIS managers out of a job.

While we don't claim to have all the answers, the following are a few tips on what areas and companies to keep an eye on during the coming months:

- Digital Equipment Corp. will move to counter IBM's thrust into the telecommunications arena, announcing network management products designed to interface with network transmission equipment. DEC is expected to make a major network management announcement at Decworld '87 next month.

Still in question is whether DEC will bite the bullet and link up to IBM's Netview/PC, an interface to IBM's Netview, a host-based network management system that IBM is proposing as an industry standard.

Continued on page 42

Office nets remain islands

BY PATRICIA KEEFE
CW STAFF

PALO ALTO, Calif. — A recent vendor-conducted survey of Fortune 1,000 companies indicates that less than 50% of these firms have instituted data networking on a corporatewide basis.

These results contradict reports of widespread connectivity among major businesses and institutions, even with galloping sales of networking products, according to the Wollongong Group, Inc., a vendor of Transmission Control Protocol/Internet Protocol communications software, which conducted the survey.

Wollongong's research consisted of three parts: consultation with market research firms; a formal survey conducted by the company's marketing group with outside assistance, targeting senior-level executives in a 10% sampling of the Fortune 1,000; and an informal survey of networking industry executives about real or perceived impediments to corporatewide networking.

Wollongong said it was "disheartened" to find that nearly 75% of the Fortune 1,000 have thus far implemented networking on an intradepartmental, or work group, level only. For example, 57% of those interviewed said they do not link computers and other data devices to similar equipment in other departments.

"Despite the obvious advantages of significant cost savings and increased productivity through shared data and improved communications, more than half of America's largest corporations have . . . failed to recognize and enjoy these interdepartmental networking benefits," Wollongong said.

But among those users embracing corporatewide networking, nearly 40% cited data and peripheral sharing as the primary impetus. Improved productiv-

Continued on page 40

Bell entrance key to voice mail market

Equipment sales, service should pick up after FCC grants approval

BY ELISABETH HORWITT
CW STAFF

While voice messaging equipment sales will continue to make steady gains in the private sector, they should receive a further boost in 1988 when the divested Bell operating companies start setting up voice mail services, according to a recent report by Probe Research, Inc.

Private businesses will continue to account for a large portion of voice mail equipment sales, the New York-based research firm concluded.

But by 1991, purchases by Bell operating companies should make up approximately 20% of total sales of almost $1.1 billion, Probe Research said.

While a few independent telephone companies already offer voice messaging services — such as The Southern New England Telephone Co., which has offered them for approximately two years — "none of them has spent more than $100,000," said Probe Research analyst Karl Kozarsky.

"So the market will really begin next year," when the regional Bell holding companies receive approval from the Federal Communications Commission to

Continued on page 42

Bell operating companies' voice mail services

Telephone company purchases of voice mail equipment should exceed $1 billion by the end of 1991

INFORMATION PROVIDED BY PROBE RESEARCH, INC.
CW CHART: MITCHELL J. HAYES

Data mover links IBM, DEC hosts

BY ELISABETH HORWITT
CW STAFF

IBM VM and MVS host systems and Digital Equipment Corp. VAX/VMS hosts should be able to exchange bulk files using new versions of Systems Center, Inc.'s Network Data Mover (NDM), which the company is expected to introduce this fall.

NDM currently runs in IBM MVS and DOS/VSE VTAM environments and on the IBM Personal Computer. Systems Center said it expects to introduce a VM version of the product in October and a VAX/VMS version in the fourth quarter of this year.

All of the versions will talk to one another, according to Steven Whiteman, Systems Center's vice-president of marketing. The VAX and IBM host versions will communicate via DEC's Decnet/SNA Gateway product, he said.

The IBM versions of NDM are VTAM-based, so they can support a wide variety of job schedulers as well as security systems from different vendors, Whiteman said. NDM also handles a wide variety of IBM file structures, he added.

The product's data transmis-

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Inside

- GE interfaces connect E-mail, Dinoss, Profs. Page 40.
- Network vendors link up to bring connections to LANs. Page 40.
- Unisoft rolls out 9.6K bit/sec. communications controller. Page 43.

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GE links E-mail, Profs, Disoss

ROCKVILLE, Md. — GE Information Services recently unveiled two software interfaces that provide dial-up connections between its Quik-Comm electronic mail service and private systems using IBM's Professional Office System (Profs) and Distributed Office Support System (Disoss).

The Profs Connector and the Disoss Connector interfaces can be used to interconnect in-house office systems or reach third parties, according to David M. Page, manager of business communications for GE Information Services, a division of General Electric Co.

The Profs Connector for VM hosts costs $10,000, while the Disoss Connector for MVS hosts costs $15,000.

More connection options

According to company officials, links will be provided between GE Information Services' standard Quik-Comm Connector architecture and other computer systems in the future.

GE Information Services said it will announce software for Digital Equipment Corp.'s All-In-1 system sometime this year.

GE Information Services was formerly known as General Electric Information Services Co.

BIT BLAST

LANs gain SNA, LU6.2 connectivity

Yet another pair of network vendors have allied to bring host-based and wide-area communications to the local-area network (LAN) environment. Under the terms of a recently signed OEM agreement, **Eicon Technology Corp.** will provide **Waterloo Microsystems, Inc.'s** Port PC LAN with CCITT X.25 packet switching, connectivity to IBM Systems Network Architecture/Synchronous Data Link Control and 3270 and 5520 gateways and electronic messaging via the CCITT X.400 standard. Norcross, Ga.-based Waterloo will begin shipping the initial products resulting from the agreement in the third quarter, the company said.

Communications Solutions, Inc. in San Jose, Calif., now offers LAN-based versions of its Systems Network Architecture (SNA) software to systems integrators, LAN vendors and large corporate users. Computer Solutions' software includes Access/SNA 3270, Access/SNA Advanced Program-to-Program Communications (APPC) and Access/Document Interchange Architecture. The new LAN offerings allow users to concurrently access multiple SNA sessions, regardless of whether they are 3270, APPC or Document Interchange Architecture applications, Computer Solutions said.

The **Corporation for Open Systems** (COS), an organization of vendors and users dedicated to promoting standards in the computer industry, gained new input from the user community recently when the International Communications Association (ICA) joined up. ICA, the users group of 630 communications managers, has become a nonvoting affiliate associate member of COS, which enables it to discuss standards issues with other COS members but not vote at meetings.

An Ethernet board recently introduced by **Univation, Inc.** in Milpitas, Calif., reportedly combines faster access to a LAN with software that connects DOS and Unix systems via Transmission Control Protocol/Internet Protocol software. The Lifelink NC516UT's hardware is said to speed up access to the network by incorporating a LAN coprocessor chip and 16K bytes of main memory for multipacket buffering. The board runs TCP/Link, Univation's DOS-to-Unix connectivity software, and is available now for $595.

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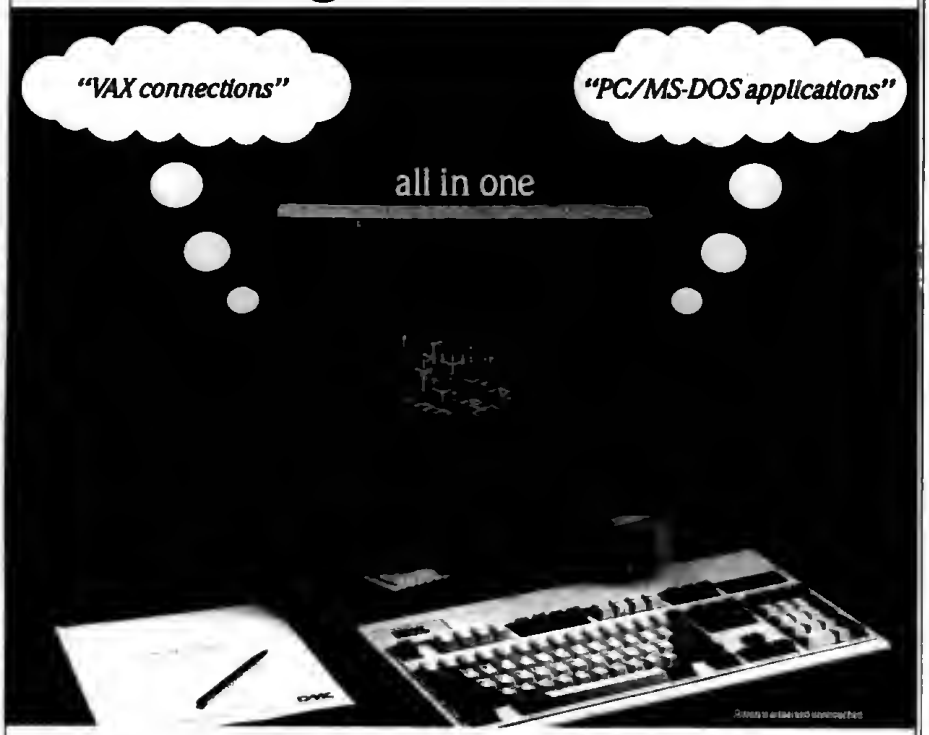

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Office nets

CONTINUED FROM PAGE 39

ity and communications needs prodded 29% into action, while 11% reported that networking was a "necessity" in their operations.

Of the users surveyed by Wollongong, 49% said they saw no need to institute networking on a corporatewide basis. Another 14.5% said they had only recently begun to appreciate the need for, and benefits of, interdepartmental connectivity.

Conversations with other networking vendors revealed a different view of impediments to interdepartmental networking.

Ranked in order of frequency of response, these impediments include:

- Concern over security levels and controls.
- A perception that corporatewide networking is cost-prohibitive.
- Underinformed or misinformed senior management with regard to benefits and reasonable return on investment.
- Compatibility concerns, such as a lack of common networking standards, heterogeny of networks and operating systems and incompatibility between data bases and systems.
- Absence of corporate networking/communications strategies.

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94% wanted the RAMIS human-factored, menu-based architecture, with its easier access to all system functions, plus expert paths for more experienced users, in contrast to competing 4GL syntax-oriented interfaces.

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Change

CONTINUED FROM PAGE 39

Gaining even nominal support from DEC would be a coup for IBM. A key issue of the network management wars is whose system acts as collection agent and report generator for the data coming in from various telecommunications devices.

• The regional Bell holding companies will be the next staging area for the battle over telecommunications dominance. As soon as they gain the Federal Communications Commission's permission to offer information services, their divested operating companies will need intelligent processors that can act as adjuncts to their switches, collecting and processing network control and diagnostic data as well as supporting voice and electronic mail services and other enhanced offerings. According to Jack Walsh, managing director for Integrated Strategies Group, Inc., DEC, IBM and AT&T will compete to sell hosts to the operating companies.

The outcome of this battle will determine how and to what extent users can integrate their in-house electronic mail, network management and other applications with carrier-based services. So watch for upcoming joint development agreements between the computer makers and the holding companies. A Nynex Corp.-DEC project to develop Integrated Services Digital Network offerings is reportedly in the works.

• A sure sign that electronic data interchange (EDI) is becoming viable will be AT&T's reentrance into the market. The carrier has already been burned once in the EDI arena, through its aborted Net 1000 venture. At a recent EDI conference, AT&T staff manager Margaret Goscinski said that while AT&T has "all of the facilities to offer EDI now," the company remains unsure as to how soon it will take the plunge.

A spokesman for EDI services vendor GE Information Services said that EDI's slow growth is a not a technical but a management-related "it-takes-two-to-tango" issue. EDI has worked best in cases in which all parties see a benefit in linking up electronically — such as the apparel industry's recent joint EDI effort, which was driven by overseas competition. The interchange has not worked when one group forces another to implement EDI — as the auto makers have done with their suppliers.

• Potential fruits of the IBM-Network Equipment Technologies Corp. (NET) joint development agreement could include interaction between IBM's Systems Network Architecture applications and T1 networking, according to NET President Bruce Smith. This interaction would allow NET's Integrated Digital Network Exchange switches to do bandwidth allocation prioritization based on information about what applications end users are sending, he added.

Horwitt is a *Computerworld* senior editor, networking.

Data mover

CONTINUED FROM PAGE 39

sion facility reportedly can initiate multiple transfers to the same host or to multiple hosts.

It also can preset a time for a file dump. IBM's Bulk Data Transfer software, which is NDM's main competitor, does not handle VSAM; it supports MVS only and has no timed file transfer, according to Systems Center.

By keeping records of file transfers, NDM provides MIS personnel with an audit trail for security and accounting purposes.

The IBM host versions of NDM will be ported to LU6.2 when IBM's VTAM implementation of the peer-to-peer protocol is generally available, Whiteman said.

The product supports Netex, a file transfer product from Network Systems Corp., and can run over Network Systems' channel-based network, Hyperchannel, at speeds of up to 1.35M bit/sec., according to Whiteman.

NDM is currently installed at approximately 230 sites, including several Fortune 500 banks and brokerage houses, he added.

Key applications for the bulk data transfer product include software downloads and overnight data base updates.

Bell

CONTINUED FROM PAGE 39

introduce voice mail tariffs, be added.

Currently, Pacific Telesis Group is the only regional Bell holding company to have filed a voice mail tariff on behalf of its divested operating companies, Pacific Bell and Nevada Bell.

According to Probe Research's Kozarsky, three other holding companies have issued requests for proposals for voice mail equipment — Ameritech, Bellsouth Corp. and Nynex Corp.

The three regional Bell holding companies that have yet to file tariffs are expected to do so within the next several months.

According to current regulations, each of the holding companies must file a Comparably Efficient Interconnect plan to satisfy the FCC that competitors will have the same level of access to basic telephone services that support the voice mail offerings.

The Department of Justice must also give approval, since voice mail is considered an information service offering.

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NEW PRODUCTS

Local-area network hardware

The **H174-04 controller**, designed for the Challenger 3270 Communications System, has been announced by **Harris Corp.**

The H174-04 remote-control unit is said to support four devices and features an ASCII printer port and IBM 3179-G graphics display support. It also supports Systems Network Architecture/Synchronous Data Link Control operation at speeds up to 19.2K bit/sec. and Binary Synchronous Communication operation at speeds up to 9.6K bit/sec.

Other features include 1M byte of system memory, an RS-232C remote diagnostic port and a 3½-in. diskette drive. Software functions include status-line support, dual-session support and on-line diagnostics.

The H174-04 Challenger Contoller costs $3,350.

Harris, 16001 Dallas Pkwy., Dallas, Texas 75248.

Network management

Software designed to centralize support of Novell, Inc. Netware, IBM Token-Ring and Ungermann-Bass, Inc. Net/One local-area network (LAN) users has been announced by **Brightwork Software**.

Netmanager is said to allow network managers to answer questions from LAN users about problems with application software. It includes data base management functions that let LAN managers keep track of time spent on LAN problems and generate reports on LAN support activities.

Features include a full-screen interface and several levels of security.

Netmanager costs $950. Each workstation requires the vendor's Netuser disks, which cost $245 for a package of 10.

Brightwork Software, P.O. Box 8728, Red Bank, N.J. 07701.

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Customer-premise equipment

A communications controller said to allow up to 256 asynchronous devices to communicate over a channel-based connection to s mainframe host running Unix has been introduced by **Unisoft Corp**.

The **9750 CU/X**, which is a customized version of Intel Corp.'s Fastpath control unit, supports data rates of up to 9.6K bit/sec. per terminal-to-host connection.

The first version of 9750 CU/X will support UTS, Amdahl Corp.'s implementation of AT&T's Unix System V. A later release will support IX/370, IBM's mainframe Unix operating system. Subsequent versions will support other mainframe versions of Unix according to customer demand, Unisoft said.

A 9750 CU/X supporting 64 lines sells for $70,000, with each 64-line upgrade costing $22,000.

Unisoft, 6121 Hollis St., Emeryville, Calif. 94608.

Links

Gateway Microsystems, Inc. has enhanced its **Microgate 3270/Systems Network Architecture** (SNA) emulation software for IBM's PS/2 series.

Microgate 3270/SNA Version 2.0 features 3270-Personal Computer Applications Program Interfaces (API) and background file transfer capability. API permits an applications program written in a high-level language to control a communications session. The background file transfer capability permits a user to start a file transfer and then exit DOS to perform other tasks while the file transfer continues to completion in the background.

Version 2.0 costs $495 as a software add-on for existing users of Gateway products or between $795 and $1,595 bundled with the firm'a Synchink internal modems and communications adapters.

Gateway, Suite 105, 9501 Capital of Texas Highway, Austin, Texas 78759.

File servers

An IBM 5250 emulator, said to allow personal computers to run IBM's Displaywrite/36 in a remote environment without an IBM controller, has been announced by **Micro-Integration Corp.**

The **Micro-SNA/5250** supports the Tex ntry Assist feature when configured as an IBM 5294 controller, thus eliminating the need for s 5294 controller.

With the communications adapter, the Micro-SNA/5250 costs $895; without the adapter, it costs $695.

Micro-Integration, P.O. Box 335, 63 Maple St., Friendsville, Md. 21531.

Modems/Multiplexers

The **AST Research, Inc. Camintonn/Digital Equipment Corp. Products Group** has unveiled a family of four Hayes Microcomputer Products, Inc.-compatible **modems**.

Compatible with personal computers, the modems are said to transfer data over dial-up phone lines at speeds ranging from 300 to 19.2K bit/sec.

Prices range from $399 to $1,899 for the modems.

AST Research, 2121 Alton Ave., Irvine, Calif. 92714.

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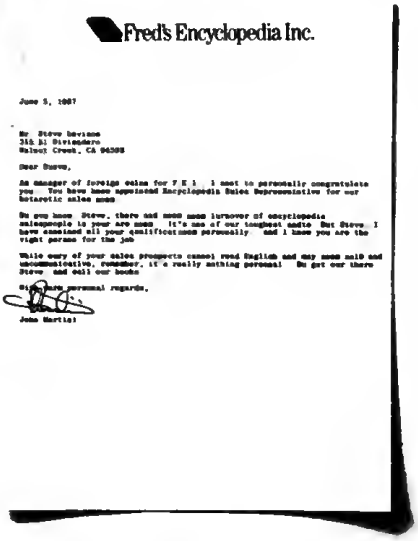

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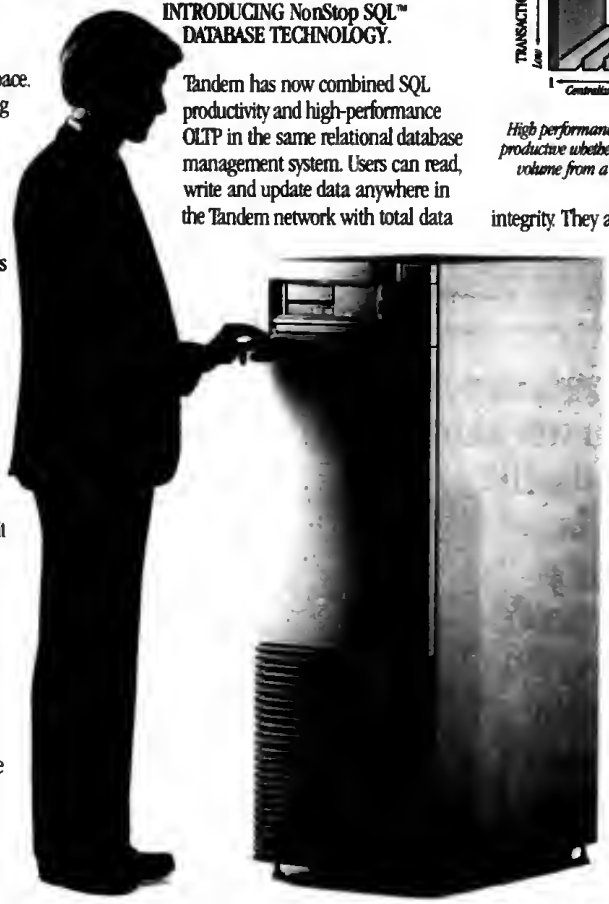

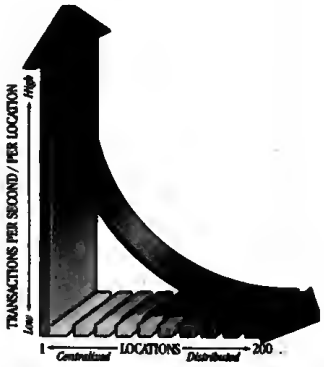

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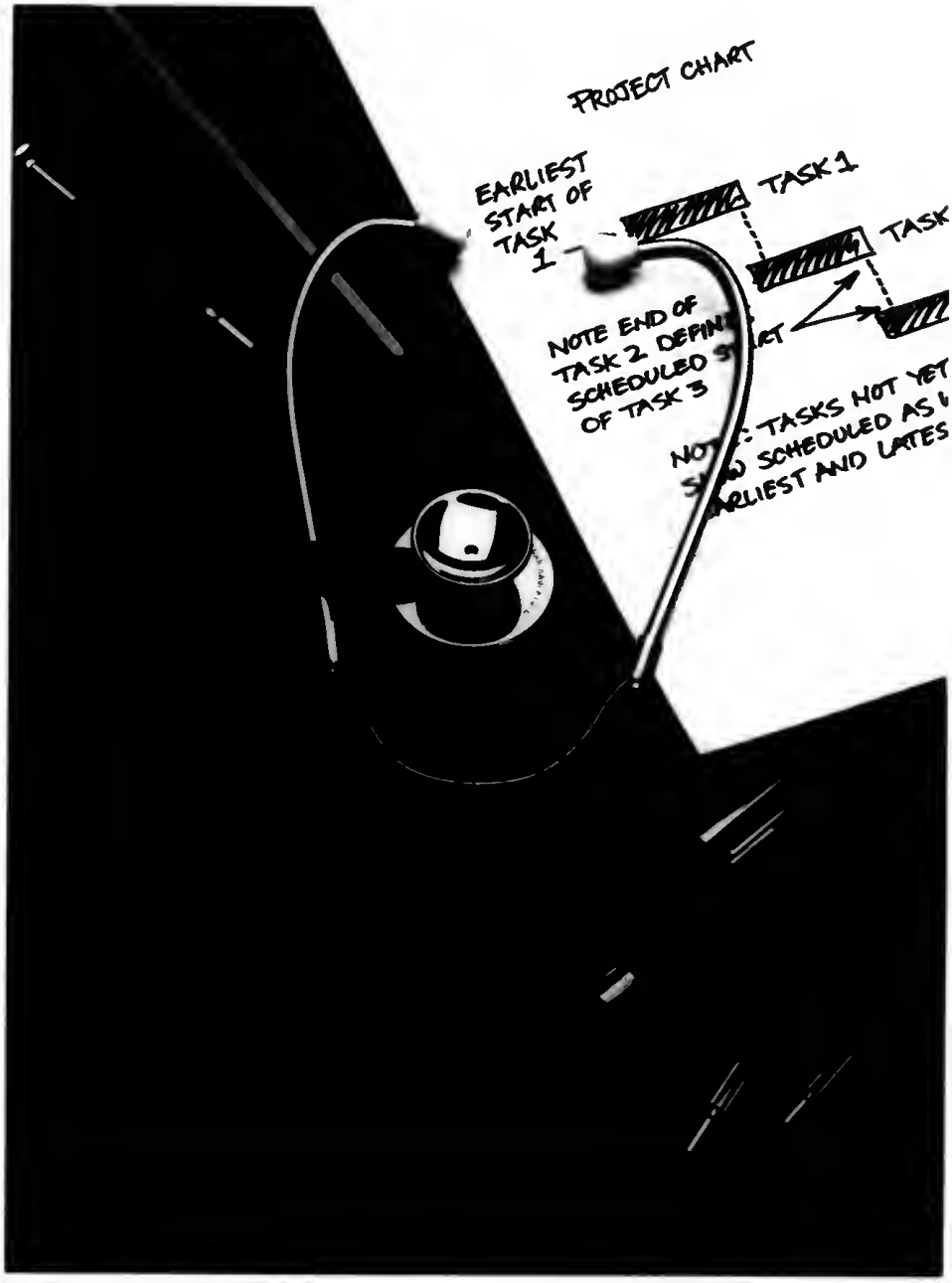
SPOTLIGHT

FIELD SERVICE



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Increased competition for service business has produced broader coverage and has spurred more individualized offerings.

PLANS UNFOLD TO COVER USERS

BY ALEXIA MARTIN

KEVIN POPE

The service requirements of computer equipment users are becoming more complex as systems stretch to accommodate more ambitious and far-reaching applications. The old definition of service as repair and maintenance no longer constitutes an acceptable response.

When a customer in California orders a rental car from Avis Rent-a-Car System for pickup at LaGuardia Airport in New York, for example, that would seem to him a relatively simple process. Behind the scenes at Avis, however, the nonstop Wizard network processes this and thousands more transactions every day from reservation agents in 17 countries.

The network connects more than 8,000 devices — terminals, printers and systems from a variety of vendors — as well as time-sharing services and connections to American Airlines, American Express Co., Citibank NA and others. Sales and marketing personnel tap into the management information system through either the time-sharing system or the information center.

Keeping everything running smoothly in a complex network with multiple applications, multiple sites, multiple vendors and multiple user types requires dedicated personnel and well-managed relationships with system and service providers. No matter how efficient Avis internal staff resources are or how fault-tolerant the technology, computer equipment occasionally malfunctions or requires fine-tuning. As the number of end users increases, their demands also impact service requirements.

Avis currently has maintenance contracts with General Electric Co. and IBM, among others. It uses a variety of approaches to maintenance, based on economics. But what is most important, according to Dave McNicholas, senior vice-president of Avis's systems marketing and development, "is reliability and availability. When we have a malfunction, we want it fixed — we don't want any fumbling in the dark from our service providers."

The combination of complex environments of sophisticated networked systems and increasing numbers of relatively unsophisticated users demands equally sophisticated responses from service providers along with a special sensitivity to individual needs.

For a long time, manufacturers defined service as the ensurance that the product (hardware or software) performed to specification. Given customers' more complex needs, however, manufacturers and independent service organizations are revamping that concept. Service now means total customer support, throughout the life of a system and beyond.

Support begins before the actual sale of the product, with the manufacturer selling the right solution based on an understanding of customer needs and, in some cases, educating and helping customers to understand their needs. It encompasses implementing a solution — planning the process, training technical and nontechnical users, installing hardware and software and troubleshooting during this critical start-up period.

The umbrella term "service" also encompasses providing ongoing support, identifying

Martin, a consultant at Information Systems Consulting in Los Gatos, Calif., specializes in the development of service and support portfolios. She is the author of the multicient research study, "Service and Support Opportunities."

Plans unfold

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hardware or software faults — ideally before they cause problems — fixing them and maximizing the effective and efficient use of systems. Actually, as it includes assisting customers to evolve or migrate to more appropriate solutions as they change and grow, service is a never-ending process.

As the computer industry grows increasingly competitive and systems become more similar functionally, manufacturers grow to regard total support of the customer as a way of differentiating themselves from competitors.

Service is also a recession-resistant profit generator. Service revenue reached an average of 27.86% of total revenue in 1986 among 11 computer companies tracked by E. F. Hutton & Co. in its Electronic Data Processing report. Several of the companies said that more than one-third of their revenue is derived from service — Digital Equipment Corp. with 34.6%, NCR Corp. with 35.1% and Control Data Corp. with a hefty 43.5%.

As service revenue, whether defined as just hardware maintenance or as more comprehensive customer support, continues to rise from a third or so to roughly half of manufacturers' revenue (as E. F. Hutton estimates it will), the nature of their business will change to more of a service function, with as much emphasis on process as on product.

This orientation toward process, which integrates service components of maintenance of hardware and software with training and consultative assistance, bodes well for customers.

Anticipating problems

Regardless of whether users get maintenance services from manufacturers or independent service companies, they'll be seeing a lot less of field engineers. Through manufacturing advances, technology is more reliable, and equipment faults can be predicted before they happen via remote diagnostics between computers and vendors' high-tech centers. On-site assistance is being replaced, or at least significantly augmented, by service technology.

"Service technology" is the term used by manufacturers to describe the delivery of service via technology. Tom Bankert, director of service technology engineering services at Data General Corp., says, "Service technology drives productivity, generates new service offerings and allows us to funnel our expertise into customers' systems."

The value for the customer is a more reliable system and lower cost of ownership. The value for the vendor, according to Bankert, is in the ability to "service an increased oumber of more complex systems in the field without an increase in work force."

The service delivery process starts in product development at which time service engineers, concerned about serviceability and maintainability, contribute to product design. Products are designed so that users can install, diagnose and maintain them. Intrepid users can install most micros and swap components for repair. Even large, multiuser systems such as Hewlett-Packard Co.'s Micro 3000 or the IBM System/36 are sold as user-installable without tools, in large part because of their modular design.

Remote fault diagnosis

System monitoring and error analysis is also increasingly being built into larger systems such as IBM's 3090.

In the movie *2001: A Space Odyssey*, HAL sonorously tells the ship's crew, "I am having difficulty in maintaining contact with earth. The trouble is in the AE-35 unit. My fault-prediction center reports that it may fail within 72 hours." Although such self-monitoring by computers was only recently the stuff of science fiction, it is now very much the stuff of reality.

Service engineers at NCR, for example, use a remote diagnostic tool, Expert Systems Preventive Maintenance (ESPM) on the company's I-9000 products to test customers' failing systems through telephone connections. Using a component called a health monitor, ESPM checks the customer's system for such indicators as repeated memory errors or faulty disk sectors. If ESPM detects any symptom of a pending problem, the error logs are automatically sent to the NCR Remote Support Center. There, an expert system is used to analyze the log and make recommendations.

In many cases, problems can be resolved remotely without having to send a field engineer. When on-site support is needed, service engineers are dispatched with the right equipment to fix the already diagnosed problem. Error logging lets users or vendors identify problems and request service on equipment that is beginning to fail before system performance is compromised. This predictive maintenance is changing the nature of service from a reactive "fix-it" activity to a proactive solution.

On the other end of the customer's remote diagnostic telephone connection is a high-tech service or support center. To reduce costs associated with providing support from multiple local sales/support offices and to leverage expensive telecommunications and expert diagnostic systems, manufacturers

Continued on next page

Firms explore 'help-yourself' attitude in maintenance

Choosing to become a self-maintainer is "a matter of money and politics," says Bob Webber, president of Computer Maintenance Corp. (CMC) in East Rutherford, N.J. "The money piece is that you can make a case to become a self-maintainer, given a certain number of devices." The political issue, he says, is whether data processing, purchasing or even the Help desk should manage the maintenance operation.

Relatively few companies do all their own maintenance on their mainframes and minicomputers. The few who do are mostly regional Bell holding companies or large manufacturing companies with round-the-clock operations and an infrastructure of service technicians.

When organizations have a response-time requirement that cannot be economically met by vendors, they become self-maintainers. When jobs are needed for outdated technicians who are too young to be retired but have too much seniority to be let go, an enterprising manager will attempt to justify performing major computer maintenance in-house. Other reasons cited by companies that are performing self-maintenance are the possession of highly specialized hardware, security requirements or proprietary information.

Some large companies, for which self-maintenance represents too drastic and risky a step, are moving into a middle ground and exchanging contracts for time and materials maintenance.

'Self-insurer'

One company pursuing this course is Syntex, Inc., a major pharmaceuticals research and manufacturing firm based in Palo Alto, Calif. "Syntex is a self-insurer, not a self-maintainer," says Art Keller, director of computing. "We still buy maintenance contracts on our IBM 4381, 3081 and 3090 CPUs, but maintenance on direct-access storage devices, controllers, tape drives and communications gear is performed under time and materials." Keller has saved Syntex more than $400,000 in the last three years. With the savings, he can buy spare parts as backup to protect Syntex operations.

"We do a risk analysis on each device to determine our exposure," Keller says. "We weigh the cost of a spare part against the cost of a maintenance contract. If we're not willing to step up to the cost of a spare part and can't tolerate the risk of being down, then we go with a maintenance contract." For its mainframes, Syntex has signed a minimum maintenance contract that covers weekdays and prime shift, as well as overtime charges for maintenance calls outside this coverage.

"Given the reliability IBM builds into its gear, we feel this approach is much more cost effective," Keller says. "With this approach and with our problem-management and change-management procedures, we provide our users 99.6% availability."

Micro motivation

Self-maintenance is a more common phenomenon in the areas of micros and terminals. Increased reliance on personal computers in business, combined with the unpalatability of paying 10% of the purchase price or more per year for maintenance, is driving companies to consider the self-maintenance option.

The information center often serves as the motivating force to develop a hardware maintenance capability. Help-desk staff start by exchanging an entire workstation, monitor or printer and eventually move to board replacement and more sophisticated service. A manager of technical support at a major aerospace company says, "Any time we have five units or more, we maintain them in-house."

Mark Linde, lead analyst in information services for Home Box Office (HBO) in New York, says his operation currently maintains 400 PCs. When HBO started, it had 80 to 90 PCs. "It was more economical than paying a maintenance organization $250 per PC. We had staff already working on teleprocessing terminals and just taught ourselves what we needed to know to maintain PCs."

The decision at HBO to bring maintenance in-house was also motivated by information services' service-oriented philosophy of keeping users comfortable with new technology. "Our end users are more comfortable with us than an outside service organization. We can fix problems with their machines in one to two hours," Linde says.

Having more than 300 units might justify establishing an in-house capability to displace maintenance contracts that average $250 per PC each year. The major costs for self-maintenance include labor, benefits, training and parts. Technicians also need documentation, diagnostic equipment, sources for spare parts and a way to fix components cost-effectively.

A self-maintenance company experiences problems when it owns a wide range of equipment, each piece of which requires a significant investment in spare units or when purchases of new equipment frequently necessitate retraining of technicians.

"We found we had to develop standards for acquisition in order to limit the number of different kinds of micros we would have to maintain," says the aerospace company's technical-support manager.

INCREASED RELIANCE on personal computers in business, combined with the unpalatability of paying 10% of the purchase price or more per year for maintenance, is driving companies to consider the self-maintenance option.

Buddy system

Computer manufacturers and independent service companies have responded to this trend toward self-maintenance by offering parts banks, board repair, backup service plans and resident personnel.

Hewlett-Packard Co.'s Cooperative Support Program, for example, begins with extensive customer service training. The program includes parts and exchange, inventory management guidance, engineering change service notes and phone-in technical assistance. The on-site time and materials assistance of an HP customer engineer is also available.

For the user organization with equipment from several vendors, a relationship with a third-party maintenance organization that has a spare-parts inventory and loaner microcomputers and peripherals will make maintenance life easier. At HBO, Linde's group fixes what it can in-house but sends boards to CMC.

CMC's Webber says, "The self-maintenance company and the independent service company are natural partners to provide responsive and economical service to the user."

ALEXIA MARTIN

Plans unfold

FROM PREVIOUS PAGE

increasingly centralize service into national or regional centers. For customers, the value of these centers is that they offer consistent support, regardless of where the customer is located.

Integrated support center

Currently, major manufacturers retain separate hardware service and software support centers. But an emerging trend is to offer a single point of customer contact for hardware, software and networking service and support to simplify problem solving.

A prime example of how integrated support can work is DEC's Colorado Springs-based Customer Support Center (CSC). The CSC houses groups responsible for remedial and advisory support of internal and external hardware and software customers throughout the U.S.

During 1986, the CSC supported 56,000 customers and one million telephone calls. At the center, work groups of hardware and software specialists deliver services such as system problem analysis, preventive hardware services, advisory software product services, remote software remedial support, network monitoring and maintenance support, Decsupport remote delivery (software fixes and updates) and the Digital Software Information Network (a data base of product information).

Behind the scenes

Vendors are increasingly making use of customer information systems. When a call comes in to a service center, the service representative can immediately access background about the account and respond with knowledge about the customer's systems and environment.

These same information systems are used to monitor the time to repair and, depending on company policy, call service escalation procedures into play.

Computer-assisted dispatch speeds service engineers on their way to customer sites. IBM customer engineers are equipped with portable radio terminals to receive service calls. Engineers use the terminals to access an electronic mail system, IBM's Electronic Customer Communication Option (ECCO), and communicate with other IBM parties that can expedite service and correct faults.

Customers with a network maintenance option can log problems directly to ECCO rather than call a toll-free number and monitor the status of problem resolution for themselves.

The days of snippy, unknowledgeable customer support representatives asking, "Have you read your documentation?" may be over. To cut costs and provide more timely information, vendors are increasingly making online data bases, originally created for internal use, available to customers.

These data bases contain information about known problems and their associated solutions, installation, use, products and pricing and sometimes provide programs such as configurators or software demonstrations.

All the answers

"Answer every question only once" is the philosophy behind Askinfo, an electronic support delivery system that IBM makes available to customers for the first six to nine months after an equipment purchase.

Eligible customers can search a data base about IBM products, on subjects ranging from VM systems to personal computers. The data base includes commonly asked technical questions and answers, installation information and news items.

If the search does not produce an answer, customers can ask a new question. These questions are routed to an IBM technical support center and are answered by product specialists, normally by the end of the next business day. Questions and suggestions about Askinfo are reviewed by product specialists and are periodically added to the data bases. Askinfo is evolving into the role of IBM's strategic direction for direct customer technical support, replacing telephone support from its Customer Assistance Centers. As of January 1988, no new customers will be provided telephone support.

Service technology is making it possible for manufacturers to reduce on-site calls, keep labor costs low and pass on more attractive terms to customers in the form of cooperative maintenance or self-maintenance options (see story page S2). If on-site services are needed, they will be expedited with the assistance of a field engineer who has been briefed on the problem and is carrying the proper equipment to fix the system.

> THE DAYS of snippy, unknowledgeable customer support representatives asking, 'Have you read your documentation?' may be over.

As more vendors make diagnostic tools available to customers, the option of self-maintenance will appear increasingly attractive. Customers must determine, however, if using their internal labor is truly as cost-effective as contracting with a vendor for service and support.

One of the most significant service trends, due to the complexity of customers' systems environment, is the response from manufacturers and independent service companies alike in providing consultative services.

Vendor as consultant

Service delivery will increasingly be more consultative in nature. Prior to a major sale, manufacturers provide, often for no fee, feasibility studies, needs assessments and cost justification assistance. Planning, design, conversion, customized training and implementation services are sold as part of complex system installations. Other fee-based consulting services include application development and programming, capacity analysis and planning and project management.

IBM's Systems Integration and Professional Services (SIPS) group, for example, offers users the following consulting services:

- Application development assistance consisting of on-site user requirements analysis, design, programming, testing and system implementation.
- Review of customers' project management capabilities and training in IBM's project management process.
- Software installation and testing of IBM packages.
- System integration in which SIPS will manage and perform complex development and installation efforts.
- Solutionpacs: Fixed-fee, predefined offerings that might include software customization, software installation, technical and user education and postinstallation support.
- System programming for operating system or data communications control system offered on-site or from remote sites.
- Conversion assistance for IBM-to-IBM systems or some other manufacturer's system to IBM.
- Data security consulting.
- Information system consulting on data base or system architecture.

SIPS, totaling 1,000 staff members, originated by providing these services to the government. It is currently leveraging its experience and aggressively pursuing large-scale commercial business.

Already, SIPS has begun work with Ford Motor Co. to integrate Ford's current computer systems with IBM 9370s, which will be used as office processors. SIPS will also assist Ford with plans for its future systems directions.

Other manufacturers offer niche consulting services. For example, Steve Kiser, field operations manager of Xerox Systems Consulting and Integration (XSCI), says his group focuses on document processing studies, which embrace desktop publishing, electronic printing and electronic publishing.

XSCI begins by identifying document processing applications and their related benefits. Staff members then develop a strategy and implementation plan. They also design the appropriate systems and facilities and establish the required organizational and operating processes. They train customer personnel in proper practices and procedures and establish publishing standards for controlling and improving performance.

Package design

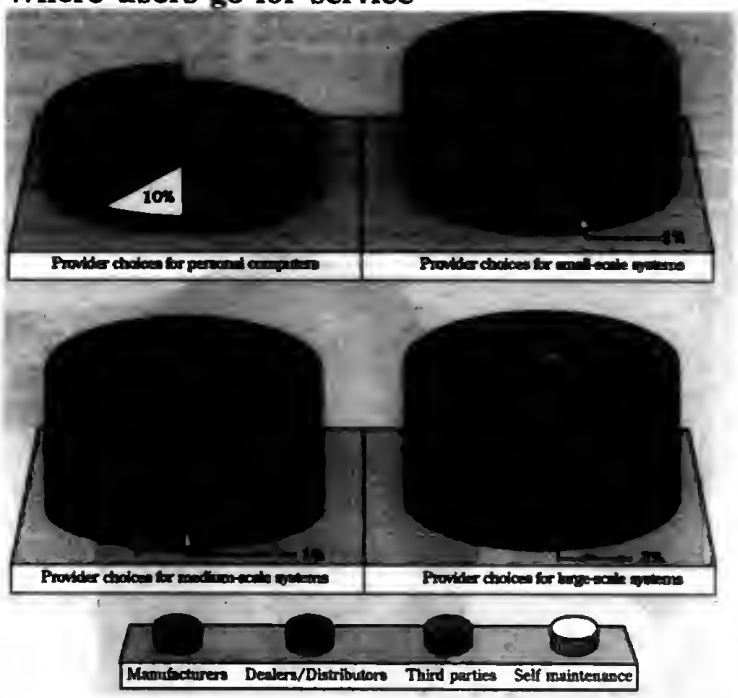
Selling services, particularly when they include a great deal of intangible consultative services, is not easy. Most major manufacturers had, until recently, offered fairly plain-vanilla services to meet customer needs and pocketbooks.

On the hardware side, vendors offer on-site contractual services available from 8 a.m. to 5 p.m. Monday through Friday, as well as extended hours and day coverages, and carry-in and depot repair services.

Software support for operating systems and generic applications, such as office or data base management, is also offered under a comprehensive on-site contract that includes telephone support and software upgrades and documentation. The latter two are usually also available on a stand-alone basis.

To make consultative services easier to understand and sell, vendors are finding innovative ways to package service and

Where users go for service



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support and also are developing high-profile marketing approaches. The trend in packaging is to provide an integrated service package consisting of some combination of hardware services (site planning, installation and maintenance), software support (account management, telephone support and software/documentation updates), training (for both technical and end-user staff) and a variety of consulting services.

The right solution

Experienced customers, while they may not like it, understand that maintenance and training are required. First-time buyers, on the other hand, particularly end users or office-systems employees, have been led to believe that technology is almost fault-free and that once the vendor installs the system, everyone will be up and running miraculously, beating out their competitors. The reality is quite different.

> "OUR USER base has broadened so significantly that it has become a management issue to train and support our users."
>
> KATHY RICHARDS
> FIREMAN'S FUND INSURANCE CO.

One department manager at a major San Francisco bank, watching his people begin to use PCs, moans, "Never has a technology been so crude and required so much training." Selling the right solution, in terms of systems and services, is the first key to customer satisfaction.

Clarifying customer expectations is also critical. Kathy Richards, director of business computing support at Fireman's Fund Insurance Co., headquartered in San Rafael, Calif., laments, "Our user base has broadened so significantly that it has become a management issue to train and support our users."

Such users are becoming more wary of vendors who downplay the need to train. At Hewlett-Packard, sales representatives, assisted by service representatives, work with new customers to make sure they understand what is required of their organization during and after implementation in the way of support and training and how HP will help. Every systems sale made by HP is reviewed by local sales, customer engineering and system engineering management to ensure that the proper product and service mix is sold to meet the customer's application need and level of sophistication.

Most manufacturers provide free site examination, hardware installation and verification that equipment is working with larger systems. Recognizing the implementation period as a critical time to cement customer satisfaction, some manufacturers provide varying amounts of no-charge services, such as planning or design reviews, as part of marketing support. To an increasing degree, implementation services are being expanded and offered as fee-based start-up services. These are available for MIS to use in support of end users and are being refined for use by actual end users outside the direct control of MIS.

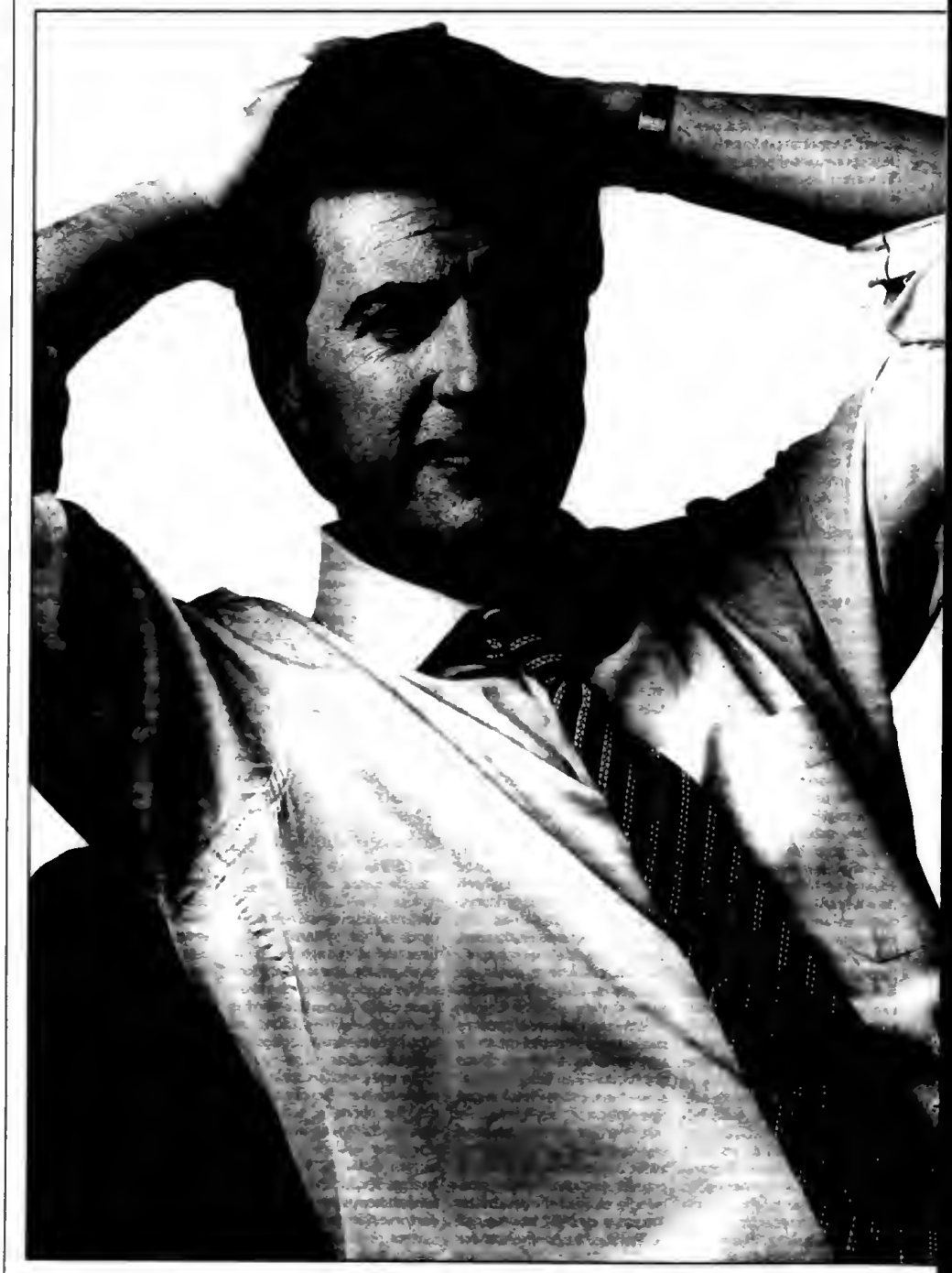
A sampling of services

These start-up services include planning and guidance assistance, training, a first-year maintenance contract and, sometimes, access to a time-sharing system on which the customers' implementation staff can come up to speed. In this area, DEC's services are the most comprehensive and expensive.

HP offers structured Assist programs for $5,700 with a "cookbook" for customers to follow to develop their own implementation approach. Customers develop their own implementation plan and carry it out with HP system engineers assisting at critical points such as hardware and software installation or review of the customer's plans for training and ongoing support.

DG offers a similar approach, with pricing based on system and configuration, reflective of DG's experience with multisite, networked installations.

IBM's Solutionpacs, as an



example of fixed-fee packages consisting of software and support, are offered to simplify the marketing, ordering and installation of specific IBM products such as Netview Program Product, Token-Ring Network or System/36 office series.

Scott Bower, marketing manager for Solutionpacs, says the value to the customer is that "with a fixed price on professional services, the customer knows what he is paying for up front."

A Solutionpac offering may consist of some combination of pregenerated systems and applications software, "snap-on" applications software for standard operating environments, application competency center support, customer support telephone service and customized or fixed-price application integration and customization services, design, installation and education services. While mostly software-support oriented, Solutionpacs also may contain maintenance services and a single point of contact for service for the total offering.

Following a general trend to sell industry-specific hardware and software solutions, manufacturers are beginning to tailor services to industry needs. This trend is most visible for the presales and implementation aspects of the system life cycle. Several manufacturers, notably IBM, DEC and HP, have industry-specific competency centers in which experts assist customers to determine needs and then implement major systems tailored to their companies.

HP Assist comes in industry-specific varieties such as manufacturing, engineering or financial services. IBM's new 75-member Customer Service Sector marketing team is working to develop total service and support packages with a vertical-market focus (banking, finance/brokerage, manufacturing, retail). The strategy will be delivered via Solutionpacs.

Hardware service solutions are not yet industry-oriented. One manager of field services reports, "We don't really see enough commonality of needs among companies in an industry to tailor our hardware services to an industry sector. We always work with customers to tailor service to their specific needs." On the other hand, customers frequently criticise field engineering for its lack of knowledge of their business. With more industry focus and field-service training, vendors can erase this criticism.

FOLLOWING a general trend to sell industry-specific hardware and software solutions, manufacturers are beginning to tailor services to industry needs.

Several manufacturers and independent service companies with general market products are, in fact, assessing customer needs in order to develop industry-specific cradle-to-grave service portfolios.

With these start-up and implementation services continuing to be more industry-specific, customers have the option of contracting with manufacturers. Customers do not have to muster extensive internal staff resources to implement new systems that must be reabsorbed into the organization when the job is finished.

Network services

Given the increased demand for corporatewide and local-area networks (LAN), manufacturers with such products are packaging specific network services that combine hardware, software, training and consulting services. DEC, for example, markets network services from its field services, software services and educational services organizations, according to Will O'Brien, corporate strategic marketing manager of field services. Though the services may come from separate organizations within DEC, the customer receives an integrated solution.

DEC's network services portfolio includes network physical design consulting services, such as site survey, physical layout design and installation planning; network physical installation

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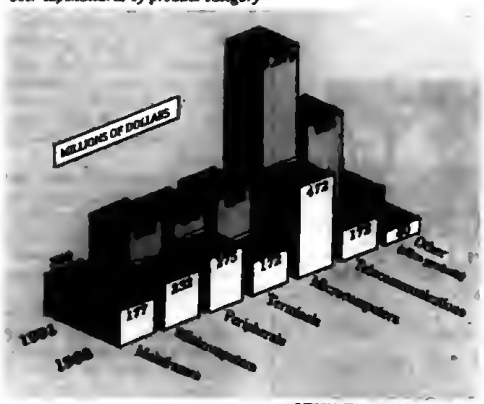
management, in which DEC manages all network installation activities from planning to network acceptance testing of the equipment and functional testing of applications; ongoing maintenance under a DEC service contract; Servpak services — simple, fixed-price planning, installation and maintenance services; and Decsite services — assistance to prepare space for new equipment or when moving equipment to a new site.

The next significant group of players to enter network services, and with true added value, will likely be the regional Bell holding companies and independent telephone companies, working on their own or in conjunction with independent service companies.

The holding companies' added value is their ability to focus on network and systems management, which includes voice communications in addition to high-speed data services and peripherals. Several of these players plan to provide a single point of contact for system monitoring, diagnostics, inventory tracking, implementation coordination, preventive maintenance and system restoral.

Hardware maintenance activities
User expenditures by product category



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Multivendor services

To minimize finger-pointing and maximize the pinpointing of problems in a multivendor environment, manufacturers are extending service options to cover nonlogo systems. If the manufacturer has network products, these are offered under the umbrella of network services or, if not, as the offering of a third-party services arm. Depending on the manufacturer's strategy, these services include maintenance of other vendors' equipment, or at least replacement of such equipment if it is shown to be at fault, or the manufacturer acts as a general contractor through cooperative arrangements with other vendors (usually of noncompetitive but compatible systems).

DEC began servicing non-DEC equipment several years ago under its DEC-compatible service option and currently services more than 1,000 such products. The company would prefer to be seen not in the third-party maintenance business but rather as a total-support provider — a network service provider. O'Brien says, "A customer puts a non-Digital peripheral on a VAX. We are committed to support our customers, and that includes the non-Digital peripheral."

Service engineers may not actually perform the maintenance, but DEC will manage the resolution of the problem, subcontracting to another manufacturer's service operation as necessary for the actual maintenance. The key to remember is that DEC will maintain (or manage maintenance for) non-DEC equipment if that equipment is connected to a DEC system or network.

Honeywell Bull, Inc.'s Customer Service Division's service strategy, prior to the split of Honeywell Information Systems from Honeywell, was to become the single source of "building services" — servicing environmental control and security systems, networked minicomputers (Honeywell minis and others) and popular end-user workstations and peripherals.

Today, according to Dick McDermott, director of Honeywell's third-party service marketing division, the focus is to provide network services and become a general contractor that can address hardware, software and communication maintenance needs in an office, building or plant or in a multisite corporation.

In June, IBM announced to corporate customers that it will help them integrate non-IBM equipment with IBM products across its entire product line. The move is part of a strategy to deliver integrated service management, with the focus on network services. IBM's Complex Systems Organization will act as prime or subcontractor to implement customers' systems, including other vendors' products. On the PC front, IBM's expanded support program provides for replacement of specific non-IBM products diagnosed as causing machine failure with non-IBM spares acquired by IBM. Unisys Corp. is set up to support customers with critical or revenue-generating applications regardless of which vendor's equipment is in place, according to Bob Wilson, director of customer services sales.

Entering the multivendor or third-party service is a profit-generating strategy and a marketing tool for additional system sales. The move to provide such services is under scrutiny by most major manufacturers.

Independents' response

Manufacturers' encroachment onto the turf of third-party maintenance organizations, which prefer the term "independent service companies," is provoking innovative responses from these independents. These companies view the move as an opportunity to show how their services better address customer needs.

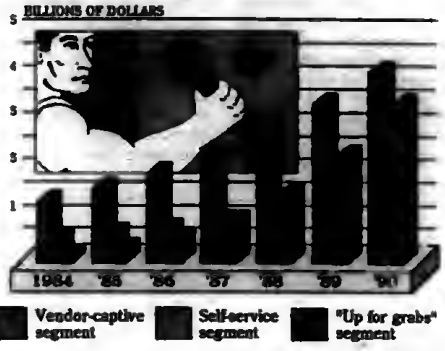
Whereas a manufacturer's expansion into service is a ploy to sell more of its own equipment, says Bill Patch, vice-president of marketing and planning at Sorbus, Inc., "the independent service companies have no ulterior motive. We want to help the customer get the most out of the life of the system."

TRW, Inc. is beginning to market a "service concierge" concept. "We're going after big IBM data centers in a class way," says Jim Larkin, director of sales operations. An account manager will take full responsibility for customer satisfaction at an account and interact with the various service functions within TRW.

Quality service and lower prices have been the hallmarks of independent service companies. Savings realized by customers moving from manufacturers' service contracts to such companies average 15% to 20%. Savings can be even higher for maintenance on older equipment, since some manufacturers raise maintenance prices on such systems. The promise that one party will be responsible for all maintenance is the biggest lure the independent service companies offer. The larger companies maintain mainframes, minicomputers and micros from most major manufacturers. Expanding from single systems, TRW, Sorbus and Intelogic Trace, Inc. are beginning to offer maintenance and consulting services for all equipment on LANs.

The independent service companies will increasingly offer customized programs tailored for multivendor environments, handle problems associated with networks of computers and data communications equipment nationwide and provide software support. High-visibility telephone support and software fixes should make offerings from independent service companies even more attractive. With such services, these companies are capturing about 10% of the total services market.

Revenue trends in network support services
Shares for the major market segments, 1984 to 1990



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and parts — particularly for the latest products," according to consultant D. R. MacNaughton of Business Development International in Franklin Lakes, N.J.

IBM's support to third parties is generally acknowledged as good. DEC's reputation, on the other hand, is one of being increasingly recalcitrant and difficult to deal with. DEC insists that it provide parts and training to all direct owners of specific products. One astute independent service company executive says, "DEC's recalcitrance and arrogance is fostering creativity. You better believe independent service companies will develop ways to get around them and best them, just because they are arrogant."

> INDEPENDENT service companies "face a serious difficulty — access to manufacturer training, documentation and parts — particularly for the latest products."
>
> D. R. MACNAUGHTON
> BUSINESS DEVELOPMENT INTERNATIONAL

Our research at Information Systems Consulting, a consulting firm based in Los Gatos, Calif., shows that independent service companies, particularly smaller vendors, are providing far superior service to that of manufacturers. Smaller independent companies are capturing customers with more comprehensive service and support.

Pritronix, headquartered in Dallas, is a "customer advocate — representing the customer rather than the product," says Jim Price, Pritronix president and chief executive officer. The firm provides services from the cluster level down. According to Price, "typically, IBM will maintain the 3090 down to the controller but can't afford to give a lot of support below the controller, which is the most mixed vendor environment."

Pritronix's support staff works with a customer to define requirements, review and test product alternatives and make a recommendation. Pritronix "warmware" support staff also implements the system, trains users and maintains it.

Independent service companies, however, "face a serious difficulty — access to manufacturer training, documentation and parts — particularly for the latest products."

Manufacturers entering the multivendor service arena are also finding out for themselves the realities of difficult access to parts, documentation and training. TRW, Sorbus and others have been around for a long time and have addressed the difficulties. While they do not enjoy the same luxury a manufacturer's service arm does of easy access to engineering, source code and logic diagrams, these companies have figured out how to create the same body of knowledge that a manufacturer has of its products by using reverse engineering and other trade secrets. Manufacturers will have to develop comparable knowledge for other manufacturers' products, and they are far behind the independent service companies on the learning curve.

Rick Brusuelas, manager of market research firm Input's customer service program, predicts that the aggressive

independent service companies will continue to innovate and shed their reputation of providing just hardware maintenance. "If they don't innovate," he says, "they'll lose market share and see their business potential deteriorate."

Price wars

Making life even more difficult for independent service companies are the price wars resulting from IBM's Corporate Service Amendment (CSA). CSA provides 16% to 36% maintenance discounts to customers willing to accept responsibility for initial problem diagnosis. Whether to become more competitive with DEC or independent service companies, IBM's move has started a price war that should ultimately reward the customer.

Independent service companies, notably TRW, Sorbus and CDC, have countered with their own programs, some cutting prices even further and some offering more favorable terms and conditions [CW, June 1]. Like IBM, TRW has an enterprise approach to the market and recognizes the value of large accounts. It has made that recognition tangible in the form of a TRW Service Plus Amendment, according to Larkin. "TRW's prices are already competitive," he says. "TRW Service Plus Amendment pricing offers an increased discount of 10% to 20% over normal prices."

The company offers favorable terms and conditions with its amendment. It provides seven-day 24-hour service at no additional charge. It offers two-year price protection to customers who sign up for four or five years and offers a price cap of 5% thereafter. TRW also allows 30-day cancellation for poor service. "We take a reasonable approach to customer problem tracking and resolution," Larkin says.

Sorbus's Patch reports that the major difference between his company and IBM is that Sorbus is more flexible in pricing, based on what equipment the customer has. "Our discounting," he says, "is based on total number of sites, density of equipment at a single site and whether the customer has a Help desk to do preliminary problem determination."

Instead of focusing on negative incentives like money down or certification based on hundreds of questions, Patch says, the Sorbus contract has positive incentives such as one month of free service in a two-year contract. Price is an attention getter, but customers cannot afford excessive downtime and are sensitive to quality and a known level of service.

CSA has actually created an opportunity for independent service companies to clarify for customers just what strings are attached to IBM's amendment and thereby get a foot in the door to sell their services. The major independents offer a quality product that is not "just IBM service but cheaper." Shopping around can result in lower maintenance costs and quality service.

Missing: 'Warmware'

Despite the fact that competition is driving prices down, stories of customer dissatisfaction still abound. The most common complaint about service personnel is "they don't understand our business." Customers criticize this lack of understanding particularly when end-user systems are being implemented. In some cases, customers also complain that service personnel do not care about them or their business needs.

In focus groups that address service needs of MIS managers, such as those run by Tony Wolff and Co. in Santa Rosa, Calif., Wolff reports that participants differentiate service from support. When asked to name the animal that best describes their feelings about service, they respond, "[Service is like a] father — he takes care of the equipment," or like "a cheetah — it's strong and quick to meet any situation." When asked to define support, respondents said, "[Support is like a] mother — she comforts me, cares for me and is always there," or "Support is a warm, cuddly koala."

Participants with minimal experience in end-user systems list "someone real nice" or someone "who really wants to help me" as service requirements. Participants from companies that are more experienced with computers respond, "We need help knowing how we can use [services] more effectively," or, "I want highly responsive, technically proficient service."

Wolff concludes that there is an overall segmented market as well as a segmented market within a firm, and "too many vendors fail to understand the qualitative aspects of service and support" for these markets.

"Vendors must do their homework on technology-based service solutions because we are hitting people in their hearts," he says. Service providers — manufacturers and independent service companies alike — need to continue their quest for reasonable prices, quality and excellence in service. In addition, they must express empathy for their customers.

Despite an emerging trend to provide specific implementation support during the critical introduction phase, manufacturers can still do more to cement a long-term partnership. Support can be defined as "to give courage, faith or confidence to, to assist, to further and to forward." Vendors that expand the nature of service to include such support will forward not only their customers best interests but their own as well. ●

Weak connection to customers hobbles network services

BY DICK MUNN

The market for network support services will probably amount to $9.2 billion in 1990, but the extent to which vendors providing network support services will profit from this growth is questionable, because vendors are having a difficult time establishing a separate identity and value for network support services.

This market can be divided into three segments — a vendor-captive segment, a customer self-service segment and an "up-for-grabs" segment.

The vendor-captive segment consists of those services for which customers normally turn to their equipment vendors for support. Customer self-service is fairly self-evident. The up-for-grabs segment is made up of those services either performed by vendors with marginal presence in accounts or services that customers would be willing to give up and prefer to have vendors perform.

Vendors with strong equipment presence in an account will most likely retain the majority of service and support business on their equipment.

Customers as competition

At the same time, customers themselves are a significant source of service and support, and it is unlikely that vendors will ever replace customers' self-service in a significant percentage of cases. Based on a 1987 survey conducted by The Ledgeway Group, sent to communications and network customers, it appears that the customer self-service segment is growing faster than anticipated. Vendors seem to be having difficulty establishing a separate identity for their service and support offerings and gaining recognition for and acceptance of the value of those services.

During the past few years, more vendors have been offering a portfolio of network support services including the following:

- Network design consulting.
- Site construction and cable-laying.
- Additions, moves and deletions of network components.
- Integration of various network components and certification that the network is performing to specifications.
- Assistance in establishing network control center procedures.
- Connecting or bridging existing networks.
- Implementation assistance for new technologies.
- Maintenance on network components.
- Network performance, analysis and capacity planning.
- Backup technical support.
- Network software support.
- Remote network monitoring and/or problem management.
- Service at remote network sites.

Respondents to Ledgeway's customer survey indicate that approximately 70% of their network or communications maintenance and support services are provided by in-house staffs. When asked if their vendors had made them aware of the special maintenance and support services available to them, 12.2% of the respondents answered "no," 21.4% answered "partly" and 66.3% responded "yes." In

Continued on page S16

Munn is president of The Ledgeway Group, a Lexington, Mass., market research and consulting firm that specializes in the service and support industry.

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IBM's CSA: It always pays to scrutinize the fine print

BY DON GOODSPEED

In October 1986, IBM summoned its largest account teams to announce a new maintenance offering, the Corporate Service Amendment (CSA). Because of the low number of customers willing to leave their existing special test maintenance offerings, such as the Enterprise Maintenance Amendment (EMA) and the Customer-Managed Network Amendment, IBM found it necessary to take the following additional actions:

- In 1987, marketing representatives were assigned a quota for maintenance agreement revenue sales.
- On Feb. 3, network discounts increased by a weighted average of more than 12%.
- On March 31, a major CSA overhaul was announced, providing free 21-shift coverage, no termination charge with notice, fixed-percent upper limit contract escape points and an additional 5% discount for a five-year contract.

It appears from client surveys that the March CSA enhancements have been enough to dispel user apprehension about the System Option in the maintenance agreement. However, feedback indicates several more improvements will have to be made before large numbers of customers will sign up for the Network Option. Many IBM customers are currently using a potpourri of service approaches on network devices, including third-party, self-service and oo contracted coverage.

The CSA, undoubtedly, was approved at IBM corporate headquarters with two purposes in mind: Customers assuming some of the IBM maintenance tasks should receive a portion of the cost they have shouldered in the form of a published discount, and the CSA could provide a strategic block for the significant and growing competitive pressures of the third-party service industry.

One size fits all

IBM's October 1987 withdrawal of most current special offerings indicates it would like the CSA to become a one-size-fits-all approach. The question remains as to whether knowledgeable customers will accept this standardized approach or take their requirements to third parties for customized maintenance solutions.

By publicly announcing the CSA, IBM declared its long-range maintenance direction to its customers as well as the industry. This declaration seems to have motivated IBM's competition to provide more creative, customized solutions that carry less restrictive conditions.

During the past two months, most third parties have been declaring their own maintenance directions and are offering up to 20% lower prices than the CSA and often guarantee service satisfaction levels.

It appears that with the five-year CSA, IBM has attempted to deliver a knockout punch to the other players in the service arena. Users should be concerned about the broad implications of reduced competition giving total account control back to any manufacturer. The aggressive pricing generated by the third parties has forced IBM and other manufacturers to discount their high-margin maintenance business. The absence of such competition would reduce the need for further special deals and continued pricing concessions.

Long qualifying round

IBM customers report that meeting the CSA contractual requirements to become a qualified location is neither quick nor effortless. Clients and surveyed companies are reporting significant time differences for their local IBM team to implement the agreement. It is apparent that CSA implementation is almost totally dependent on the knowledge, organization and planning of the local marketing team.

After IBM receives a written CSA request, the company performs a detailed 372-question on-site review. (A total of 199 questions address the network option.) Numerous clients have indicated that 30% to 40% of these questions are not relevant to the actual maintenance task or its delivery.

Apparently, IBM is attempting to ensure that customers can and will perform systems- and network-management disciplines, which will allow it to preserve appropriate service margins.

Experienced users know IBM usually does not give away revenue without expecting something in return, and the CSA is no exception. Under this contract, users will earn their discounts, and IBM will secure a guaranteed maintenance revenue stream for up to five years.

The Customer Management Control Procedures Exhibit (CMCPE), as described in the CSA contract, is an all-inclusive utopian view of systems management detailing the customer's responsibility under the contract.

For a number of years, IBM has been studying systems management and how these associated disciplines can affect its service delivery costs. Few experienced large-systems users would argue against the need for effective change-, system- and network-management controls. One wide-open question remains, however: How much systems management is required to effectively manage an account?

It is one thing if the CMCPE is just a legal contractual view of customer responsibilities. However, if a customer must accomplish all items as outlined and to the level stated, it is quite another.

In the past, IBM has seldom enforced the unique terms and conditions of its maintenance agreement and its attachments. However, few prior offerings had fixed discounts equivalent to those provided by the CSA. When IBM describes change, problem, and network user responsibilities contractually and the word "must" appears 29 times, it is safe to assume not only that users will be expected to take on many maintenance tasks but also that there is possibly a change coming in IBM's enforcement practice.

All IBM users should understand and evaluate the CSA along with other third-party proposals; today there is no reason to pay any manufacturer's list prices.

The contract's requirement that users assume some additional maintenance-related activities needs to be quantified and prorated into other CSA fees to establish the net discount. Users must figure in all additional costs associated with the transfer of the maintenance work load.

Additional tasks users may be required to assume in order to comply with the new CSA contract requirements include training of staff and end users for setup and use of the Electronic Customer Control Option, plus the added logging, reporting and associated administrative activities.

No price protection

A termination charge will be billed for all machines withdrawn from the CSA contract. It becomes the customer's responsibility to track, monitor and document why the charge should not apply. No termination charge will be levied if advance notice (90 days for three-year contracts, 180 days for a five-year contract) is provided to IBM.

The CSA upper limit provision offers no actual price protection. It does provide customers a contract exit if any and all combined pricing actions on each machine type have exceeded 7% or 3.5% when measured across the total CSA-designated machine inventory. The customer is responsible, however, for tracking and identifying whether either of these limits has been exceeded between anniversary dates of the CSA contract period. They then have the following three options available:

- Remove the machine type from the contract with no termination fee and pay the list price.
- Contract with another vendor for this specific product type.
- Pay the new IBM price and stay with the CSA.

For now, IBM appears to have stabilized its CSA offering, and with the exception of some minor fine-tuning to meet competitive offers, don't look for any significant changes in the near future. Even if users are currently considering other vendors or options, it will take time to secure proposals and evaluate any changes. Provided the initialization costs don't push the break-even period to more than a few months, it would be wise to get what you can now and execute the System Option while the dust continues to settle on competitive responses.

A sound plan of action could include the following steps:

- Execute the five-year System Option.
- Shortly after execution, give a six-month termination notice.
- Forcefully manage the initialization process.
- Try to negotiate the elimination of all initialization fees.
- Look for options on network product service.

A common question users ask is this: "If we take the CSA discount offering, will we then receive a lower level of service?" IBM's National Service Division must reduce its maintenance delivery costs, and one of the primary ways is to transfer work to customers and drive down the head count in the field. This is a thin line to walk, and users should pay close attention to the trends.

Top-quality service comes to those who ask, insist and, if necessary, demand. It's up to each user to manage his own maintenance program if he is truly interested in price and performance. •

IT APPEARS that with the five-year CSA, IBM has attempted to deliver a knockout punch to the other players in the service arena.

Goodspeed is president of Computer Maintenance Consultant Ltd. in White Plains, N.Y. He spent 24 years with IBM in its U.S. and European services divisions.

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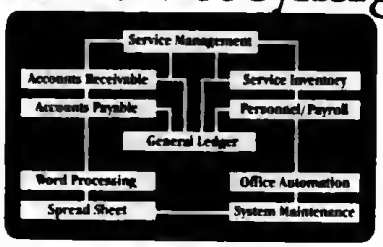

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Extended reach: A case for sharing

BY DONALD BLUMBERG

As the market demand for viable, cost-effective equipment service and support has grown, so has the use of independent service vendors.

In a number of markets, including data processing, office automation and telecommunications, the blurring of individual technologies — coupled with an increase in networking and connectivity of individual components — as well as multivendor environments has generated a need for independents to deliver service. Customers also insist that service be defined by their needs, rather than the manufacturer's, and on a single point of contact, particularly for networked equipment.

Despite the significant growth opportunities these trends present for a wide range of service organizations, many potential market entrants are scared off by what they perceive to be manufacturers' unwillingness to cooperate with independent service organizations in terms of providing parts, documentation, training and related support. Many of these organizations believe that manufacturers can and will withhold such support from them, thus restricting or limiting the opportunity for independent service.

Manufacturers as well hold their own varying opinions concerning independent service organizations and have adopted certain views as to whether they should support them.

Explanations from both a market and a legal basis may help clarify manufacturers' and distributors' decisions on one hand and those of independent service organizations on the other.

Economic arguments

A number of strong economic arguments make a case for manufacturers to support independent service organizations.

In the first place, users indicate that high-quality and cost-effective service is a critical factor in equipment selection. It follows that the greater the number of qualified service organizations available for a particular class of equipment, the greater the demand for that equipment will be.

In addition, users are increasingly demanding a single-vendor point of contact for service, but many manufacturers are reluctant to provide a fully integrated service that includes maintenance of equipment manufactured by other organizations. It is, therefore, to the manufacturer's advantage to ensure that the integrated-service vendors offering total service are capable of servicing its equipment.

Furthermore, when an integrated-service vendor becomes the service agent for a particular user, the cost to support equipment it cannot directly service is considerably higher than normal. The service vendor may attempt to force the user to replace the equipment it cannot support with equipment from a vendor that is willing to provide support to the independent.

> A GROWING number of users will demand a single service source, and more manufacturers will provide service to independent service organizations.

Ultimately, a growing number of users will demand a single service source for all equipment, and a growing number of manufacturers will provide service to independent service organizations.

Currently, users contracting with independent service providers — including manufacturers such as IBM, Xerox Corp. and Digital Equipment Corp., which are increasingly providing such services — are in the minority, representing perhaps 23% of the market. Research clearly shows, however, that more users are interested in buying service independent of the product from organizations that offer both product and technology and service in parallel.

Eventually, manufacturers will be forced to offer service as a separate line of business, thus reducing the opportunity for a full tie-in between service and product and eliminating any direct economic advantages that might accrue as a result of withholding parts, documentation, training and refurbishment capabilities to independent service organizations.

Legal arguments

More independent service providers are seeking legal means to force manufacturers to cooperate with them. These legal actions have been based on alleged violations of the Sherman Antitrust Act, fair trade practices, laws, patent issues and defamation. Two current cases, *Datagate, Inc.* v. *Hewlett-Packard Co.* and *Allen Myland, Inc.* v. *Digital Equipment Corp.*, represent attempts to resolve whether manufacturers can legally withhold support services from independent service organizations.

The resolution of these issues will ultimately depend on the existence of an independent, relevant market structure for service and the determination of whether the individual manufacturer, by withholding service and support, has created a monopoly position or is engaging in unfair trade practices.

Another question is whether an individual manufacturer's strategy for service support inhibits market entry or participation or creates a unique separation of pricing.

It is interesting to note that a similar set of cases has already been heard in connection with the servicing and support of heating, ventilation and air-conditioning (HVAC) controls in the U.S. market. A few years ago, contractors involved in the installation and servicing of these controls, manufactured by Trane Co., Carrier Corp. and other HVAC manufacturers, attempted to resolve this issue in the courts.

In the end, the cases were settled out of court by the participants without final resolution by the courts in favor of the service contractors. Individual agreements between each manufacturer and the contractors provided the service organizations with access to parts and other support requirements. Although not legally binding, that precedent suggests the question will be resolved in favor of the independent service organization.

In the UK, similar legal questions were considered within the year. In one case, automobile manufacturers attempted to halt parts suppliers from indiscriminate aftermarket selling on the grounds of patent infringement. That case was resolved in favor of the parts suppliers. In another, DPCE, a major third-party manufacturer, obtained a ruling that ICL PLC, a major computer manufacturer in the UK, must make available the error-logging and diagnostic support software for its operating system.

In general, legal arguments have tended to support the independent service operators, particularly when the manufacturer can be shown to be engaging in monopolistic or unfair trade practices or attempting to control the service aftermarket.

A growing economic and logical rationale, as well as a potential legal precedent, is evolving that will prevent manufacturers from withholding support services from third-party maintenance suppliers.

Cooperation pays

Independent service organizations should recognize that a broad base of legal regulations exists that prevent or circumvent manufacturers' attempts to monopolize service activity. Manufacturers engaging in such practices should also seriously reconsider their position with respect to the quality of service and support of independent service organizations.

In the long run, it is to a manufacturer's disadvantage to withhold support. In fact, providing parts, documentation, training and other support to qualified independent service organizations at a standard price should lead to a significant increase in profitable revenue from product sales.

An expansion of the general service industry to support each manufacturer's product line will enhance acceptance of the individual manufacturer's products. Manufacturers that attempt to capture a major share of the service market can best reach this goal by creating a strategic, independent service line and competing on the basis of high-quality service. •

Blumberg is president of D. F. Blumberg & Associates, Inc. in Fort Washington, Pa. He is currently serving as an expert witness in one of the cases mentioned in this article.

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INTERVIEW
MARKETING FIELD SUPPORT

George Keller is executive vice-president of the Association of Field Service Managers International, an organization with almost 5,000 members in 23 countries representing some 1,500 high-technology service organizations. His previous experience includes 31 years at IBM where he last held the position of vice-president of new business development in the customer-service division. Keller recently spoke with *Computerworld Spotlight* Senior Editor Joanne Kelleher.

What would you say your members consider to be their most pressing business concern?
The largest business concern that members see today is the changing technology and problems associated with it. Most large companies are losing people rather than hiring them. What's happening is the technology is becoming so reliable that they can take care of a lot more equipment with a lot fewer people. At some point, however, the companies don't want to let people go because, although they don't have the hardware work load, they need critical mass. Let's say you have a couple of thousand people working for you and that allows you to give a response time to your customers of two hours. If the work load goes down and you get rid of too many people, at some point you can no longer respond in two hours. Consequently, some companies are trying to find new things for their people to do so they can keep their people and keep the critical mass op.

What are some of the new things these companies find for people to do?
Obviously, software maintenance. Also integration — they are selling integrated service agreements, where they will take responsibility for all of a company's equipment. Some are doing site planning for computer installations. In fact, one of our member companies has architects on its staff. Another sells disaster insurance. And all of them now are doing what they call "service marketing" — marketing service as a product, as if it were a piece of hardware.

The concept of field service is really being redefined, isn't it?
Yes, it is. It's becoming a lot more support-oriented. In fact, our organization has been considering changing — and will soon change — our name from field service to field support, because the traditional hands-on service is going away, and more support-type services are coming along. For example, almost every computer store you go into today has a service manager and a service staff. In many cases, these people also do the customer training. So, we in the industry are selling training quite a bit. This is true of the larger service organizations, as well as the dealerships.

There's another new trend, actually an old trend that has come back, particularly in personal computers and terminals. More customers are doing their own servicing. We estimate that by 1990, 10% of the customers will do their own servicing.

What this means is you have to be geared to support the customer — through toll-free numbers and training schemes and things of that nature. It also has technical design implications, because you have to design the machines so the customer can take care of them. This trend of self-maintenance has come and gone over the years.

So self-maintenance may be a phase or a fad?
It may be. The one area where it is definitely not going to be a fad is in biomedical equipment. Manufacturers just cannot deliver the response time needed by hospitals. It is common in the computer industry to talk about response times of one, two or three hours, but in a hospital, they talk about minutes. If you are on the operating table and the electrocardiogram goes out, it is not very consoling to think that someone will be there in two hours. In order to get the quality of service they need, [hospitals] are having to do their own.

Can we expect to see more customized service offerings?
Yes. Some that I mentioned already include software maintenance and site planning. And a new offering that is getting very popular — service for a multivendor environment. For example, if you have Digital Equipment Corp. and IBM and two or three other vendors' products intermingled, they'll come in and take over the whole service.

Is the practice of providing multivendor service becoming the norm?
Yes, single-vendor service is becoming more common. That's the big sales point of third-party services. I don't know that companies will not survive if they don't offer it, but if they want to maintain their service presence, it is critical. You'll find that every major manufacturer now is doing third-party service of some kind.

And most of the independents as well?
The independents are doing it as well, but what is happening there is that they are realizing that to get the really big accounts they have to have national or international service. So some of them are joining together to have that national presence.

So we may be seeing the end of regional service operations?
I think you are gettting darn close to it. You are seeing them merge with Sorbus and TRW and firms like that.

How intense is the competition between vendor providers of service and independent service organizations?
Since the manufacturers have started having integrated service agreements, it is very intense. And almost every major manufacturer today is servicing equipment other than its own.

What shape do you think that competition is going to take?
I don't think you'll see price wars, but you will see declining prices — or more service for the same money.

What kind of increase do you expect in the number of independent service organizations?
If you asked that question of five different service executives from five different service areas, you would probably get five different answers. Two or three years ago if you had asked me that question, I'd have said, "Yes, it is going to continue to grow." At that time, the manufacturers had not started servicing other people's equipment.

We were predicting that by 1990 almost all the major manufacturers would have gone into third-party service, and they came in much faster than we expected. So the competition from the manufacturer is heating up, and it is not clear any longer that that is a great opportunity.

Are service providers as confused about pricing as users are?
I would say service providers have been in that situation, but now they are getting their heads together. In the past, they just took the manufacturer's price and reduced it by some amount and hoped they made it. Now, you're starting to hear them say things like, "I develop a cost stream, decide what margin I want and then price it for that."

George Keller ALAN WITSCHONKE

Conversely, I think major manufacturers are starting to take the competition into account. Where they would blindly price for some margin before, they now say, "Well, I would like to do that, but let's consider the competition, and maybe I'll have to give up some margin."

How much leverage do users have in dealing with a service provider?
Tremendous leverage, because they have many alternatives.

How can they exercise that leverage?
I think the right way to do it is to first set their own objectives for what they need, then have companies come in and see how they can satisfy those objectives. Cost ought to be a part of that satisfaction. •

Software is flexible backbone of product support operation

BY PATRICIA CINELLI

In an increasingly competitive business in which customer satisfaction is the key to profits, the installation of a mainframe field-service software system has made a positive difference in Wyse Technology's product support division.

In January 1987, Wyse decided to install several modules of Fieldwatch, a software system designed and marketed by The Data Group Corp. in Burlington, Mass., in its field-service management division. "We now have visibility in our day-to-day operations and are much more able to pinpoint any discrepancies or problem areas," says Jim Prather, director of product support at Wyse in San Jose, Calif. With the software in place, Prather explains, it is much easier to examine appropriate costs and track performance.

Wyse has either implemented or is reviewing five of Fieldwatch's six interactive modules. The company is already using Dispatch Plus, the central module of the software system, which tracks and controls the dispatching process. It also uses Scheduling Plus, which handles the scheduling of corrective and preventive maintenance, equipment installation and deinstallation, field engineering changes and equipment moves.

Another module Wyse purchased but has not yet implemented is Repair Center Management Plus, which tracks and controls all aspects of the repair function including parts, work orders, inventory and billing. An additional component now under evaluation is the Technical Assistance Center Plus module, which would be used by Wyse's technical support group.

Breaking the mold

According to Prather, Wyse is not a classic field-service organization. Because of the diversity of its products and customers, the company needs special properties in a field-service management system. Wyse manufactures a broad range of microprocessor-based products. It designs and builds systems based on Intel Corp.'s 8088, 80286 and 80386 chips, as well as monitors products for itself and its Amdek Corp. subsidiary.

Wyse provides products and services not only to resellers but also to OEMs and distributors, and it also has agreements with third-party companies that perform services for its customers and bill back to Wyse. That, according to Prather, is one of the unique requirements Fieldwatch meets. "Most companies don't deal with third parties," he says. "They keep everything in-house. Since we do, we need to accommodate third-party payments within a system."

In addition to facilitating the tracking of third-party service activity, the management software has eased some of the stress of rapid growth. Wyse recently opened its first international depot in London. Four more overseas sites are scheduled to begin operation within the next 90 days, with a total of 12 to 15 locations becoming functional this year.

This kind of growth would be impossible, Prather says, without a system like Fieldwatch as a backbone.

"Everything is pretty much set up by the time we open the doors at a new location," he explains. "Management can quickly spot inventory problems or identify costs that are out of line."

While generally pleased with Fieldwatch, Prather says he can see room for improvement. "I would like to see a stronger report writer," he says. "Because the software is set up to accommodate varying types of service organizations, it is not terribly specific. We have to go in and do our own reports."

No decline, no increase either

Because of the growth and decentralization that has taken place since the management software was implemented, Wyse has not experienced a decline in labor costs, Prather says. But, he adds, the software has allowed the company to handle more service with no reduction in quality or increase in personnel.

A growth in the profit margin within the product support division has not yet materialized, but, Prather maintains, Fieldwatch has helped Wyse recognize and pinpoint areas that need attention. He expects profitability to improve as a result of increased accountability in the future.

"Now," he says, "we can look at repairs by product type and monitor labor and parts usage for particular products and types of repair. If we find something that sticks out, it's much easier now to make changes."

Good service, Prather explains, is one way of distinguishing yourself in a crowded product category. This is a major reason for trying to be as comprehensive and creative as possible in service and support. "A customer's reason for being dissatisfied should never be service," he says. ●

Cinelli is a free-lance writer based in Washington, D.C.

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Customer's market prevails as fierce competition rages

BY JEFFREY MILLER

Are you spending more for equipment, network and software service yet enjoying it less? If so, don't fret.

Today's high-tech service customer has an unprecedented chance to get more service for the dollar. To capitalize on this opportunity, however, most companies need to rethink and restructure their service management approaches.

The raging battle for service market share will intensify as the manufacturers' previously captive customer base is challenged by increasingly competent and aggressive third-party service providers, including other major manufacturers. Manufacturers' dominance of the postsale service market for their own products will continue, but some losses in market share will occur as third-party service firms expand the breadth, quality and price competitiveness of their service offerings.

What have been healthy profit margins may become a fatality of intensifying head-to-head competition, forcing some consolidations (via mergers) among service firms. Due to increasingly prohibitive entry barriers, new manufacturers will offer service arrangements through existing firms rather than invest in building their own nationwide service capability.

Customer benefits

From the customer's standpoint, these competitive trends are good news. Customers' bargaining power will increase as vendors compete more aggressively for their service business.

Switching costs (that is, the trouble and risk of moving from your current service provider to a new one) will diminish as the offerings and capabilities of third-party servicers improve.

Concurrently, service options will proliferate as providers attempt to differentiate themselves by offering customized service programs with features such as guaranteed response time, assistance in self-service and so on.

Most companies are only beginning to capitalize on the newfound bargaining power these changes have created.

The lost advantage

Few major companies manage, or even analyze, their service spending on an enterprise basis. Instead, such spending gets buried in divisional MIS or departmental budgets, where it is considered an uncontrollable overhead item.

> FEW MAJOR companies manage, or even analyze, their service spending on an enterprise basis. Instead, such spending gets buried in divisional MIS or departmental budgets, where it is considered an uncontrollable overhead item.

Despite rising costs, the issue of service management receives little executive management attention in annual budget processes and generally is not even mentioned as a strategic issue in long-range business or MIS planning efforts.

Frequently quoted anecdotal support for anticipated trends toward customer self-service (such as Citibank NA providing its own service for its automated teller machines) are not supported by broad-based factual evidence.

In fact, direct observation at Arthur Andersen & Co., corroborated by service vendor surveys, suggests the opposite is true. Very few companies have evaluated — and even fewer are doing anything about — self-service or low-cost alternatives to traditional on-site service, except in certain product categories such as personal computers.

The service buying process is comparatively unsophisticated in many companies, as indicated by limited awareness of alternative service providers and a surprising absence of basic purchasing disciplines, such as those used for other large-scale procurement activities.

Three major implications arise from this: First, the erosion of power from providers of high-tech service is the result of permanent structural changes in the industry (analogous to the structural changes in the automobile industry that resulted from worldwide competition), but the resulting opportunities have not been capitalized upon by the major beneficiary, the service customer.

Second, a key aspect of these changes is that the shift of power to the customer side presents opportunities that should be viewed strategically — not opportunistically.

Third, while some companies may respond with an objective of cost reduction/control, the enlightened customer will take a more balanced view, one that is oriented toward service customized to long-term needs within a cost structure that may actually increase if so warranted by the requirements of the business. Overall, the balance of service cost and quality should align more closely with business and corporate objectives.

Action plan

The challenge for service buyers is to formulate a meaningful response to the indisputable strategic opportunity that is emerging from the service industry's transformation.

The first step is to cast aside your traditional view of service as an invisible, and largely uncontrollable, drain on company expenses.

Adopt an aggressive "enterprise" view of service management within the company, with an attitude that you intend to do something about it. That "something" may be stated as an overall objective, perhaps along the lines of "improving value received for each service dollar spent."

Responsibility for rethinking your company's traditional service management approach may be delegated to a cross-divisional task force or to a designated service management coordinator. Whether a task force or a "czar" makes more sense for your company is a matter of structure and style and is not a crucial issue at this point — but assignment of responsibility is.

Once named, the service task force or coordinator should begin with an in-depth assessment of your company's current service management status, asking questions such as the following:

- Who and where are the service buyers and decision makers?
- How much is being spent and with whom?
- What are the contract terms, and how do they compare with

Continued on page S16

Miller is a senior partner with the Management Information Consulting Division of Arthur Andersen & Co. He was co-author of a major study, *Future Trends in Service of Electronic Products*, published jointly by that firm and the Association of Field Service Managers.

Third parties promote choice

BY REBECCA SEGAL

Computer users today have a real choice when it comes to selecting maintenance and support providers. Independent service companies, many of them offshoots of equipment vendors' service organizations, offer an array of hardware maintenance programs at lower rates than the typical equipment vendor.

Roughly 10% of all maintenance activity in the U.S. is now performed by independent service firms, and indications are that satisfaction with these providers is high.

In a recent survey by Framingham, Mass.-based International Data Corp., users of third-party maintenance were asked to indicate their reasons for choosing that type of service. More than 78% mentioned "cost of service." On a scale of 1 to 5, "5" being "extremely satisfied," independent service users rated their satisfaction with the price at 3.7 vs. 3.2 for manufacturers' users. In other areas, such as the vendor's overall hardware repair capability, users of independent and manufacturers' service organizations rated their providers roughly equal.

Users of independent service were more satisfied than manufacturers' users with overall value of service relative to price, and about 37% of users of independent service firms said the value of the service received was greater than the price paid. Only 24% of manufacturers' users made this claim. On the flip side, more than 32% of manufacturers' users felt the value of the service received was less than the price paid.

About one-third of the users surveyed cited a "dissatisfaction with the manufacturer's service" as a reason for choosing independent maintenance.

The hard sell

The question is, why doesn't more than 10% of the user population rely on independent service companies?

One major reason is that equipment manufacturers are becoming increasingly aggressive when it comes to hanging on to their customers for the provision of service and support. Many of the major computer vendors not only service equipment they did not manufacture for their own accounts but actually seek out independent maintenance accounts as a separate line of business. Companies such as NCR Corp., Xerox Corp. and Control Data Corp. compete with "service-only" companies like TRW, Inc. and Sorbus, Inc. for maintenance contracts on a variety of equipment.

Both IBM and Digital Equipment Corp. will service nonmanufactured peripherals attached to their own systems. IBM will perform this type of work in the personal computer area only. Overall account management, which means that one vendor will oversee the service of an entire mixed-vendor system (but not necessarily take a screwdriver to all of the equipment), is increasingly offered by most manufacturers.

The whole system

Independent service companies have gained credibility during the past few years for high-quality products. The product, however, is essentially devoted to the maintenance of hardware — not to the maintenance of an entire system, which includes hardware, software and communications. Software, on the other hand, is an area of increasing focus for the computer vendors.

While recognizing the need to supply more in terms of overall customer support, most independents are unsure as to the best way to package and provide these services.

Equipment manufacturers are also beginning to chip away at the price advantage independent service firms have long enjoyed. Most third-party firms will typically undercut the manufacturer by as much as 25%, but recently announced discount programs such as IBM's Corporate Service Amendment will begin to narrow the gap.

At a more tactical level, most equipment sales representatives will try to sell a service contract at the same time the equipment sale is made. Vendors that have traditionally maintained a separate sales organization dedicated to service have turned to a single sales force selling a total end-user solution, including service and support.

End users do have a choice in where to go for service. Recognition of this has not necessarily increased the percentage that chooses independent service, but it certainly has heated up the service market and made equipment manufacturers try harder to maintain their customer base. ●

Segal is director of the Customer Service Program at International Data Corp. in Framingham, Mass.

Service for large-scale hardware

COMPANY	MAINTENANCE SERVICE PRODUCTS/PACKAGES	DISCOUNT PLANS OFFERED	REQUIREMENTS FOR QUALIFICATION	NUMBER OF SERVICE REPS OR ENGINEERS	HARDWARE SUPPORTED	ON-SITE SERVICES	SOFTWARE SUPPORT	REMOTE DIAGNOSTICS	GUARANTEED RESPONSE TIME	GUARANTEED UPTIME	SPECIAL PROVISIONS FOR CRITICAL RESPONSE	GEOGRAPHIC AREA COVERED	CONSULTING SERVICES OFFERED	TRAINING OFFERED	HOURLY RATES FOR MAINTENANCE/REPAIR
[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]
Concurrent Computer Corp. (201) 758-7500	Hardware maintenance, software support, education and training, consulting, supplies, depot repair and exchange, configuration management	Yes, 4% to 20%	Dollar volume, multiyear discounts, national and major account contracts	650 service reps, 550 field engineers	All Concurrent Computer hardware, various third-party equipment	Primary, comprehensive, limited, catastrophic, resident hardware and software contracts	Yes	Yes	Yes	Optional, 95% to 98%	Optional	Worldwide	Hardware and software special- and systems support	Yes	$110-$130
[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]
Cosmic Enterprises, Inc. (617) 435-6967	On-site maintenance, per-call services, factory repair center, contract services, module express services	Yes, 10% to 60%	Volume educational services and frequent customer discounts	24 service reps	All DEC hardware, more than 100 DEC compatibles	On-site maintenance, contract maintenance, per-call services	No	Yes	Yes, 4 hours depending on location	—	Yes, depending on contract	U.S., Bermuda	Hardware and software consulting services	Yes	$60-$98
[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]
Dataserv Computer Maintenance, Inc. (800) 328-6729	Contracts tailored to customers' needs	Yes	Varies	300 service reps, 550 field engineers	All IBM hardware	All maintenance services	Yes	Yes	Yes	Yes	Yes	U.S.	Installation planning	Yes	Contact vendor
[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]
Diebold, Inc. (216) 497-4757	Full service seven days a week, depot services, installation, first- and second-line maintenance	Yes, varies	Varies	2,700 service reps	All Diebold hardware, General Automation hardware, IBM 3270s, all IBM PCs	Maintenance service and repair, module swap, on-site depot service	Yes	Yes	Yes, depending on customer requirements	Optional	Yes, according to need	U.S., London, Hong Kong	Identifying requirements, aid in developing coverage, disaster recovery planning	Yes	Contact vendor
[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]
GE Computer Service (404) 843-6200	Solution-oriented, multivendor approach, on-site and depot repair, inventory management, procurement, deinstallation, leasing	Yes, varies	Volume	1,100 service reps	More than 20,000 devices	Installation, repair, deinstallation	No	Yes	Yes, according to contract	Yes, according to contract	Yes, according to contract	U.S., Puerto Rico, Canada	Consulting in all areas of maintenance	Yes	$90-$100
[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]
Hewlett-Packard Co. Contact local HP office	System services, workstations, network services, maintenance on all	Yes, 5% to 20%	Volume	—	All HP hardware, selected third-party network products	Installation, calibration, maintenance, network configuration and checkout	Yes	Yes	Yes, according to contract	Yes, 99% on critical response	Yes	Worldwide	Network design and performance, system design and performance, network and system implementation, system management	Yes	$92-$145

The companies included in this chart responded to a recent telephone survey conducted by *Computerworld*. Further product information is available from vendors.

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COMPANY	MAINTENANCE SERVICE PRODUCTS/PACKAGES	DISCOUNT PLANS OFFERED	REQUIREMENTS FOR QUALIFICATION	NUMBER OF SERVICE REPS OR ENGINEERS	HARDWARE SUPPORTED	ON-SITE SERVICES	SOFTWARE SUPPORT	REMOTE DIAGNOSTICS	GUARANTEED RESPONSE TIME	GUARANTEED UPTIME	SPECIAL PROVISIONS FOR CRITICAL RESPONSE	GEOGRAPHIC AREA COVERED	CONSULTING SERVICES OFFERED	TRAINING OFFERED	HOURLY RATES FOR MAINTENANCE/REPAIR
Honeywell Bull, Inc. Customer Service Division (617) 863-8000	Hardware support services, software support, customer managed maintenance (walk-in, mail-in, dispatch), premium service, accelerated 2-hour response	No	NA	3,500 service reps	Honeywell DPS 6, DPS 6 Plus, DPS 8, 88, 86, 800, DPS 7, 7,000	Installation, data verification, remedial maintenance, preventive maintenance, extended hardware maintenance	Yes	Yes	Yes, premium service option	Optional, based on contract	Optional (standard with premium service)	U.S.	Site planning	Yes	$65-$185
IBM Contact local IBM office	Maintenance agreement, warranty, hourly service	Yes	Customer management control proceed, cluster of machines, extended term	—	All IBM hardware, selected non-IBM products	On-site repair, on-site exchange	Yes	Yes	Yes (special option)	Yes (special option)	Yes (special option)	U.S., Puerto Rico (worldwide)	—	Yes	$115 - $250 (hourly)
Intelligic Trace, Inc. (800) 531-7180	Shared-risk maintenance, guaranteed response times, time- and materials billing, contract on-site maintenance	Yes, 10% to 20%	Volume	800 field engineers	IBM Series 1 and System 34, 36, 38a, all Datapoint minicomputers	All maintenance	Yes	Yes	Yes, according to contract	Yes	Yes, includes putting a technician on site	U.S.	None	Yes	$80-$125
Integrated Systems Group, Inc. (818) 502-1414, (800) 847-5800 (in Calif.)	Field service, depot repair, installation, warranty	Yes	Volume	50 service reps, 35 field engineers	All DEC PDP and VAX hardware, all Convergent Technologies hardware, Unisys 5000 series, General Automation Zebra, all Alpha Micro systems hardware	Full field maintenance on all hardware	Yes	No	Yes, 4 hours	Yes, as required	Yes, extended hours of coverage	California	Hardware and software consulting services	Yes	$80
Justec Computer Group (714) 997-0027	Basic package with up to 4-hour response time, contract support, on-site support	Yes, 5% to 20%	Quarterly prepayments, contract and term of prepayments	7 service reps, 12 field engineers	All DEC hardware and compatible peripherals, PDP-11/73 through VAX-11/780 systems	Tailored to the needs of individual customers	Yes	Yes	Yes, 4 to 24 hours (depending on contract)	No, work done on best-of-effort basis	Yes, technicians on call 24 hours a day	Los Angeles County, Orange County, San Diego County	Hardware and software (available on request)	Yes	$65
McDonnell Douglas Field Service Co. (800) 826-4944	Basic, Basic Plus and Critical coverage including on-site response, guaranteed 4-hour response, continuous work-through	Yes	Multiple sites	More than 500 service reps	More than 90 models	Hardware maintenance	Yes	Yes	Yes, according to contract	No	Yes, depending on contract	U.S.	None	Yes	$100
National Support Group (718) 698-4004	On-site service, remote technical service, depot repair, logistics support, repair kit development and management, customer technical training, product analysis	Yes, 15% to 30%	Yearly contract	800 service reps	DEC and all compatible hardware	Hardware installations and deinstallations, preventive maintenance, parts and subassemblies, warranty service, environmental services and support	No	Yes	Yes, 4 hours	Optional	Yes, continuous effort basis, can immediately replace the system if necessary	National	Product analysis and testing, product evaluations	Yes	$75
NCR Corp., Customer Service Division (513) 439-8600	Standard on-site, partnership, site-based and single-vendor maintenance, network services, disaster backup, depot plan on peripherals	Yes	Varies	More than 6,000 service reps, more than 5,500 field engineers	All NCR processors and more than 50 models of non-NCR hardware including Convergent, IBM, Compaq and Wyse	Variety of service coverage hours, field engineer on site, modifications, preventive and remedial maintenance, diagnostics, training, installation, demstallation	Yes	Yes	Yes, varies	Yes, varies	Yes, special escalation policy	Worldwide	Site survey, hardware configurations, hardware consultation, site preparation and management	Yes	$88-$156
Prime Computer, Inc. (617) 655-8000	Preferred, basic and deferred on-site services	Yes, 5% to 20%	Multiple systems at more site and minimum monthly maintenance charges $3,000	900 service reps	All Prime 50 series and Prime Unix-based hardware products and associated peripherals	Preferred service hour response within 25 miles of metropolitan service center, four-hour response within 100 miles, service for customers with multiple terminals and workstations	Yes	Yes	Yes, part of preferred service	No	Yes, in preferred service	Worldwide	Customized services (upon request)	Yes	$120-$160
Quadtronix, Inc. (213) 212-5656	Maintenance, preventive maintenance and one-hour response	Yes, up to 30%	Size and dollar amount of contract	45 field engineers	All IBM mainframes and minicomputers, all Storage Technology hardware, all Memorex hardware, all Telex Computer Products hardware, all Wang hardware	—	Yes	Yes	Yes	Yes	Yes	Southern California	Site planning and maintenance management	Yes	$125
Servcom (an Alcatel Information Systems, Inc. division) (800) 538-1400	On-site service option, on-site warranty extension option, deferred on-site service option, scheduled on-site service option, centralized deferred on-site service option, depot repair, installation, deinstallation	Yes	Volume	302 service reps, 500 field engineers	Supports more than 400 types of data communications and information processing systems	Remedial service, installation, preventive maintenance, system upgrades, warranty coverage, deferred, scheduled time and materials, relocation, extended hours coverage	Yes	No	Yes, on individual basis	Optional, on individual basis	Optional, on individual basis	U.S., Canada	Training and documentation services	Yes	$88-$190
Sorbus, Inc. (215) 296-6000	On-site service, carry-in service, 24-hour service package	Yes, varies	Varies	1,000 service reps, 1,600 field engineers	All IBM and MAI Basic Four hardware	Preventive maintenance	No	Yes	No	No	No	U.S.	Equipment selection, facility management	No	Contact vendor
Telex Computer Products, Inc. (818) 637-1111	On-site, mailback, technical assistance center	Yes, up to 20%	Product volume and density discounts	1,300 service reps, 2,000 field service engineers	Controllers, terminals, intelligent workstations, PBX products and peripherals	Basic, extended, complete services	Yes	Yes	Yes	Optional	Optional	U.S.	None	Yes	$95-$140
TRW, Inc., Customer Service Division (800) 257-7464	On-site contracts, resident technicians, mail-in service, carry-in service	Yes	Volume	2,500 service reps	All DEC VAX equipment, all IBM mainframes except the 3090	Service concierge	Yes	Yes	Yes, according to contract, (average is 4 hours)	No	Yes, based on customers' need	U.S., Puerto Rico	Site preparation to installation	Yes	Contact vendor

COMPANY	MAINTENANCE SERVICE PRODUCTS/PACKAGES	DISCOUNT PLANS OFFERED	REQUIREMENTS FOR QUALIFICATION	NUMBER OF SERVICE REPS OR ENGINEERS	HARDWARE SUPPORTED	ON-SITE SERVICES	SOFTWARE SUPPORT	REMOTE DIAGNOSTICS	GUARANTEED RESPONSE TIME	GUARANTEED UPTIME	SPECIAL PROVISIONS FOR CRITICAL RESPONSE	GEOGRAPHIC AREA COVERED	CONSULTING SERVICES OFFERED	TRAINING OFFERED	HOURLY RATES FOR MAINTENANCE/REPAIR
Unisys Corp. (215) 542-4084	Environmental facilities planning, third-party maintenance, network consulting, depot and over-the-counter repair, hardware and software maintenance	No	—	6,500 service personnel	More than 40 different hardware types supported	Full range of on-site hardware and software support services and maintenance, network support, installation planning and support	Yes	Yes	No	No	Yes, on-site coverage	U.S.	Facilities and capacity planning, networking, software application, disaster protection, general systems programming, training and education	Yes	$125-$200
Unitronix Corp. (201) 231-9400	In-house repair, on-site repair, hardware installation by contract or time and materials	Yes	Volume	8 field engineers	All DEC hardware, CDC disk drives, Fujitsu disk drives, all Emulex hardware	Full maintenance service	Yes	No	Yes, 4 hours	Optional	Yes	New York, New Jersey, Eastern Pennsylvania	—	Yes	Contact vendor
Wang Laboratories, Inc. (617)459-6000	Maintenance contract on-site, carry-in service, maintenance time and materials, software subscription, telephone and on-site contracts, warranty installation, cable services, media services and purchase, software per incident, customer-inquiry hot line, media customizing	Yes	Based on single-site volume, single billing, call screening	3,500 service reps, 5,930 field engineers	All Wang hardware	Resident on-site engineers, on-site call, prime and additional shift coverage, same-a-day warranty, time and materials installation, site preparation	Yes	Yes	Yes	Yes, 98% to 99%	Optional, based on customers' requirements	Worldwide	Premise and sales support	—	$120-$160

Customer's

FROM PAGE S12

those obtained by others, especially other companies considered to be peers?

- How well are current vendors performing in terms of basic service metrics such as response time and downtime?
- What do key users think about the service being provided, relative to their needs?

What about tomorrow?

Once the situation is understood, the task force can look to tomorrow's service environment. Consider how service needs will be influenced by the company's business strategy, such as changes in business mix, acquisitions, divestitures and decentralization of responsibility.

Current information technology initiatives — sales force automation, warehouse automation, customer electronic order entry — should also be assessed for their potential impact. Projecting from current trends, it should be possible to estimate how much is likely to be spent on service three, five or even more years from now.

The key to properly evaluating your options is to think strategically and creatively about needs and potential solutions that may lead to a future competitive advantage. The possibilities can range from "status quo" (that is, no change of the vendor mix or working relationships) to the relatively rare and risky (but low-cost) alternative of providing your own service.

In between lie the more typical scenarios such as solicitation of competitive bids through a formal request-for-proposal process, which can potentially result in vendor changes for particular classes of equipment. Alternatively, some companies have chosen to hire a firm to perform total service management for them, commonly called site service management or integrated facilities management.

Each of these options, as well as other variations your analysis may identify, has its pros and cons. The value of the exercise is in the articulation of the options and in the assessment of their advantages, disadvantages and risks. This process is the only way to secure a service management strategy that achieves the best match with business goals.

> YOU WILL find today's marketing-oriented service providers open to considering a range of mutually beneficial alliances.

Short-term cost reductions at current service levels are one possible result of this process, and you may be surprised by the number of competent service firms willing to underbid your current service provider in order to gain your business.

A better solution, however, may be a strengthened alliance with your service providers, one that provides a combination of controllable (and possibly reduced) costs along with an improved understanding of, and responsiveness to, your company's service requirements. Again, you will find today's marketing-oriented service providers open to considering a range of mutually beneficial alliances.

IBM's Corporate Service Amendment is an example of how a service provider may attempt to achieve mutually beneficial long-term relationships with its customers.

The power at hand

Creativity in redefining the service relationship can clearly result in customized, more responsive service. Costs can be controlled and possibly reduced. Your service vendor, with your cooperation, can meet your needs more effectively, enabling it to maintain the profit margins it needs to stay in business.

The current restructuring of the high-tech service industry places service customers in a more powerful position than ever before. If you wish, you can use your newfound power to reduce your service costs, and you will find an abundance of new vendors eager to gain your business at a discount price.

A more strategic approach will build on a broad, but in-depth, assessment of future service needs, balanced by issues of affordability. This process will identify opportunities to forge a long-term alliance with a current or new service provider. "Win-win" will be the framework of this alliance, and more responsive service at a fair, and possibly reduced, price will be the result — both now and in the future. •

Weak

FROM PAGE S7

other words, almost one-third of the customers have no, or only partial, information on the various service and support plans available to them.

In general, respondents express a lack of acceptance of pay-as-you-go, or service-for-a-separate-fee, pricing policies. A few pay-as-you-go services, however, earned strong acceptance, including the following:

- Maintenance on network components.
- Site construction and cable-laying.
- Adds, moves and deletions of components.
- Service at remote network sites.

Services with especially poor service-for-a-separate-fee acceptance include network design consulting and the integration of various network components and certification that the network is performing as specified. Other services fall between those two groups.

Call for help

Although customers are turning out to be fairly self-reliant, vendors do play an important role in service. When asked if they had to do it over again, 20.3% indicate they would use more vendor help, 27.3% "were not sure" and 52.4% said they would not. Services that customers would have liked more help with included network design consulting, technical support and training.

Ledgeway's study also found that the criticality of the network was the main distinguishing factor of service strategies. Those with extremely critical networks tend to rely on their staff for diagnostic support and problem solving, establishment of a disaster recovery plan and the design of redundancy into critical network elements.

Customers with moderately critical networks tend to rely on staff for diagnostic support and problem solving, contract with vendors for standard hardware and software services and purchase network diagnostic and monitoring tools to help staff service and support their network as their primary strategies.

Either many vendors have not clearly thought out what their network service and support strategy should be or there is a substantial "disconnect" between service and support organizations and the marketing/sales arms of vendors.

In an earlier focus group with local-area network (LAN) users, participants were asked if they had been approached to purchase any of a variety of network support services from their LAN or communications vendor. All 10 participants answered "no."

Customer service organizations need to take stronger measures in several areas. They must establish a clear identity for their portfolio of network and communications support services, educate customers to establish value for those services, train and motivate the marketing/sales arm of their company to properly present that portfolio of support services as well as the pay-for-service-separately pricing practices. •

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"We advertised in Computerworld, Computerworld's SPOTLIGHT section and Computerworld card decks. And the results from all three were excellent."

— Mark Potenzone
Westinghouse Management
Systems Software

Mark Potenzone is National Sales Manager for Westinghouse Management Systems Software. This group within Westinghouse markets IBM mainframe productivity enhancement software and operating systems software.

Westinghouse has taken advantage of three advertising opportunities that *Computerworld* offers, much to Mark's — and the company's — satisfaction.

"We've done mostly image advertising in order to create awareness of this group. The name 'Westinghouse' is certainly recognizable, but not as a major software supplier, even though we've been in the software business for nearly 20 years.

"We chose Computerworld *partly because of personal experience. As a software professional, I've read it for as many years as I've been in the business, and so has everyone I've worked with. In fact, I can't imagine a computer professional NOT reading* Computerworld.

"We advertised in Computerworld, Computerworld's SPOTLIGHT *section and* Computerworld's Card Decks. *And the results from all three were excellent. We've seen what advertising in* Computerworld *can do, so there was no surprise there. SPOTLIGHT also delivered very pleasing results. Because it is a special pull-out section devoted to one subject, it makes sense that when we advertised in their Network Software issue, we were reaching our customers and potential customers — exclusively.*

"The Card Decks did well for us, too. Those cards are very cost efficient and we got hot responses. If someone is going to take the time to fill one out, then he or she is interested. The result is a qualified lead.

"The combination of these three vehicles gives us the best of all worlds. Computerworld *and* SPOTLIGHT *complement each other. The cards reinforce our published ads, it couldn't be better. That's why we're working on new ads for our next* Computerworld *campaign."*

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An IDG Communications Publication

SYSTEMS & PERIPHERALS

HARD TALK

Pat Rizziello

Cleaning up 3480's act

Two key selling features of the IBM 3480 tape cartridge system are their controlled tape drive cleaning and the elimination of cleaning maintenance for cartridges.

IBM took a step in the right direction with the cleaning cartridge concept; the footage measurement is progress when compared to the 11th commandment: "Thou shalt clean tape drives every four hours, whether they need it or not."

I have been in centers where drives should be cleaned every two hours and ones where cleaning is dependent on an operator running to K-Mart for the Blue Light Special on Q-tips.

IBM tested extensively to establish when to clean the drives; its instructions are similar to automobile manufacturers' oil change recommendations of, for instance, every 7,500 miles or 3 months. The drive cleaning logic is based on footage and/or a weekly use level, whichever comes first.

IBM must design a better system than dotting the cleaning

Continued on page 50

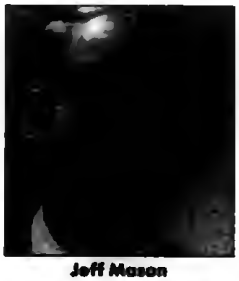
IBM systematic on publishing

Fledgling unit works up PC-to-mainframe approach in booming market

BY JEAN S. BOZMAN
CW STAFF

BOULDER, Colo. — IBM is taking a systems approach to publishing — coordinating the development of its personal computer and workstation products with host systems' existing publishing applications at the company's publishing systems facility here.

The vendor says it hopes to create a seamless integration of publishing throughout a corporation, gaining an edge against competing products from Apple Computer, Inc. as well as manufacturers of IBM Personal Computer look-alikes.



Jeff Mason

"The strategy of combining PC and host solutions is clearly an advantage to us," says Jeff Mason, general manager of IBM's Publishing Systems Business Unit. "We think we will be very competitive at each edge of the offerings."

IBM says it intends to link off-the-shelf products, like its Personal System/2 line and RT Personal Computers, with host-based publishing systems via software. Host-based software would convert PC-generated

Continued on page 48

Data View

VAR* shares

Hardware manufacturers slice up a $4.3 billion market

	Market share
IBM	21.4%
Digital Equipment Corp.	14.6%
Hewlett-Packard Co.	8%
NCR Corp.	5.2%
Texas Instruments, Inc.	5.1%
AT&T	4.2%
Unisys Corp.	4%
Data General Corp.	3.4%
Compaq Computer Corp.	2%
Zenith Data Systems	1.6%
Prime Computer, Inc.	1.3%
Others	29.2%

*Value-added reseller

INFORMATION PROVIDED BY INTERNATIONAL DATA CORP.
CW CHART

Mosaic disaster recovery package offered for micros

CAMBRIDGE, Mass. — Mosaic Computer Security, Inc., a Mosaic Software, Inc. subsidiary, recently rolled out a personal computer-based software package that is intended to guide a data center though a disaster recovery.

"We use the PC instead of the mainframe because there is a better chance it will be available in a disaster," said Michael Jingozian, Mosaic Computer Security's president. The program requires an IBM Personal Computer or compatible with 640K bytes of random-access memory and a hard disk.

Jingozian said his staff interviewed numerous consultants in order to determine the essentials of disaster recovery.

The program contains a list of procedures, including the following: who does what; what applications must be done first; how to bring up operating systems; procedures for equipment salvage; how to bring up a telecommunications network; and how to bring up backup storage.

Mosaic Computer Security provides in-house training, which normally takes three days. "Employees have to be aware there is a plan, and people have to be trained. It takes a commitment by senior management," Jingozian said.

The program, priced at $12,000 for a site license, is available immediately.

Imaging system hits 160 MIPS

BY STANLEY GIBSON
CW STAFF

PLANO, Texas — Claiming to offer performance of 160 million instructions per second (MIPS), Visual Information Technologies, Inc. recently announced a desk side image-computing system.

The Vitec Image Computing System can incorporate information from photographs, seismic data or medical CAT scans and allows users to work with the images interactively, the vendor said.

The processor attains its MIPS performance through several custom-made parallel image-processing chips, each of which can perform 40 MIPS in image-processing applications. A single chip contains eight 5 MIPS processors that perform in parallel. Four such chips in a system offer performance of 160 MIPS, explained Jim Fontaine, vice-president of marketing for Visual Information Technologies.

An advantage of the Vitec

Continued on page 49

Inside

- Itran inspection board boasts 64-level gray-scale processor. Page 54.
- MDB adds shock-protected disk subsystem. Page 54.

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Publishing

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documents to a standard markup language, enabling host processors to assemble a final, standard document no matter where the documents originated.

The fledgling publishing unit, formed one year ago to give IBM a quick break into the $1.2 billion market, just began shipments of two publishing Solutionpacs last month. Because it got a late start, IBM says, the company plans to build the new publishing business on two large bases of installed IBM machines: PCs and mainframes.

IBM is searching for a considerable chunk of the market, which is expected to grow to $6 billion by 1990. "We are interested in publishing because it is a growth industry," says Damon Trimble, a senior marketing specialist.

Going steady

To speed development of publishing-related hardware, software and peripherals, the publishing business unit will use IBM's marketing and development teams as needed. "We're not married to IBM — but we're certainly dating," Trimble says. "We would like to be close to them, but we are free, as an independent business unit, to actively seek outside products to fill the product gaps." Once the products are ready, IBM's sales force will promote and distribute them.

Parent IBM is never far away from the business unit, according to publishing officials. General managers of IBM mainline divisions, including the Entry Systems Division, sit on the board of the publishing business unit in order to expedite PC hardware developments needed in the publishing area.

For the moment, IBM is offering end users publishing solutions for both the desk top and the host machine under IBM's VM. But as time goes on, host-based and PC-based systems could merge. "Today, you've got personal publishing on the desk top," Trimble says. "Tomorrow, it won't matter where it is." That would be especially true for users on a corporate network, who might receive publishing support from a mainframe 500 miles away from their desk tops.

Limited edition

So far, IBM has limited desktop publishing offerings to IBM PC AT and PS/2 Model 30 users. Called the Personal Publishing Solutionpac, the package teams a PS/2 Model 30, an IBM 4216 printer and Microsoft Corp. Windows applications. That system costs $8,553.

The printer and the software can also be added to a user's AT as a field upgrade that costs $5,793. Versions for the PS/2 Models 50, 60 and 80 have not yet been announced.

"We've put all of our desktop publishing products on a standard PC platform," Trimble says. "But while these are standard products, we're going to integrate them as much as possible in favor of IBM." One example of IBM's unique integration is the inclusion of an Adobe Systems, Inc. Postscript board within the PC's housing rather than in the printer [CW, July 27]. The design is said to boost performance and speed output to the printer.

On the host end, IBM announced the Publishing System VM Edition in April, which supports the preparation of documents composed by more than one author and under IBM's Advanced Function Printing software.

After formatting, the documents can be printed by IBM 3812 and 3820 Pageprinters, the IBM 3800 laser printer or an IBM 4250/II Electrocompositor, which produces camera-ready masters.

"A host-based markup language will allow customers to handle relatively lengthy documents and to generate global changes throughout a text," Mason says. "It's a very important feature in any industrial strength kind of system."

The host in question can be an IBM 3090, 4300 or 9370 running IBM's MVS, OS, VM or DOS, all of which support the firm's Document Composition Facility — the anchor of all host-based IBM publishing solutions. Mason says that IBM now offers the host-based markup language

and that the company is adapting it for workstation applications. Solutionpacs for operating systems other than VM have not yet been announced.

The desk top presents a different set of challenges, Mason adds. The individual author wants to print out what appears on the screen. That capability, called what you see is what you get (WYSIWYG), is recommended for department newsletters, presentations and the like, Trimble says.

IBM suggests a more standard format, designed by corporate committees, for large enterprises that create large documents such as product manuals and insurance policies.

For such applications, the distinction between desktop and host-based systems may blur by the 1990s, Mason suggests. "Over time, we would see migrating the capability of desktop publishing to the higher capacity system," he adds. A development team of more than 100 IBM staffers in Boulder is working to give host-based systems the flexibility of PC-based systems and the ability to structure files sent from PCs to host systems.

It may be a year or more before IBM's integrated systems are full-featured. Missing now are desktop products that can produce documents compatible with final-form markup language commands and host-based systems that can produce WYSIWYG files.

The lack of flexibility means that for now, users must match their application to the host or the PC system of choice. "Where a document starts is a function of the type of work, the complexity of the document and how many authors there are," Mason says. "You can do long documents on the personal publishing system as well as short documents on the host-based system."

Rising interest

Since April, more than 100 IBM customers have bought the new solutions, according to Merry Quackenbush, director of media industry and publishing systems for IBM. Quackenbush, who designs the publishing industry marketing programs, says that especially strong interest has come from corporations in the insurance, pharmaceutical, automotive and retail fields.

IBM is prepared to brief any interested customers at its Boulder campus and at an executive briefing facility in Dallas. But the company is also training more than 200 publishing specialists who will be stationed at IBM branch offices nationwide. "The specialist support is included with the sale of the Solutionpacs," Quackenbush says. "Our publishing specialists are the first line of defense for the customer."

IBM pioneered the combination of workstation and host-based publishing for internal use. IBM produces 5,000 books, reports and manuals each year, Trimble says, that are prepared by 1,700 technical writers at 25 IBM facilities around the world. IBM creates one million camera-ready masters a year, placing the firm second only to the federal government as the largest in-house printing operation, IBM says.

XEROX

They raved about Version 1.0. Now read about Version 1.1.

Xerox Ventura Publisher, the easily mastered, industrial-strength publishing genius that runs on a standard IBM XT or AT, or compatible, just got better. Version 1.1 offers 80 significant enhancements for short document handling; text, graphics and font support; and broader output capability.

Xerox Ventura Publisher already gets raves for long documents; now Version 1.1 offers 20 additional features for producing short documents. There's automatic kerning, support for multicolumn frames, improved hyphenation, cropping and sizing of art, on-screen rulers, and automatic letter spacing, to name a few.

For documents of any length, page layout and type control have been raised from excellent to sensational. Pictures are now anchored to text during batch pagination. Documents up to 128 chapters in length, each containing 150 to 300 pages of text, are easily handled. The result is a desktop publishing package that can be judged by printing industry graphic standards.

To the longest list of text and graphics input support in desktop publishing comes even greater capability. Version 1.1 adds word processing interfaces for XyWrite, Displaywrite III and IV and DCA files. There's graphic conversion for more than 500 graphics packages based on a dozen file formats, including Macintosh "PICT" and image files. Plus downloaded PostScript fonts, conversion of H-P Soft-fonts and support for Adobe screen fonts.

This new release makes Xerox Ventura Publisher the first desktop publishing program to support the industry-standard page-description languages: PostScript and Interpress. That means total compatibility with all popular laser printers, including, of course, the Xerox 4045 Laser CP and the Xerox 4020 Color Ink-Jet Printer.

Xerox Ventura Publisher 1.1—industrial-strength publishing genius that lets you do so much more, so much faster, ever so easily—right on the desktop.

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For more information about Xerox Ventura Publisher 1.1, stop by any computer store featuring Xerox software, contact your local Team Xerox sales office, or call 1-800-TEAM-XRX, ext. 213B.

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Imaging

FROM PAGE 47

system is that it incorporates components that previously often had to be configured by a customer. "System integration is a big problem for end users," Fontaine said.

The system will be sold in two models. The Model 120, with 10M bytes of image memory, 160-MIPS performance, 1,280- by 1,024-pixel display resolution and 4M bytes of application memory is priced at $88,000; the Model 100 offers 6M bytes of image memory, 640- by 480-pixel display resolution, 122-MIPS performance and 4M bytes of application memory for $68,000.

Both systems include a color monitor, 140M bytes of hard-disk storage, streaming tape backup, keyboard and mouse. The Vitec Image Computing System was designed for OEMs and end users and is scheduled to be available primarily to OEMs in the fourth quarter.

Cleaning up

FROM PAGE 47

cartridges or magically calculating that if you clean *X* times with a cleaning cartridge the drive "should" last six months. One data center tapped into its system management facility data to produce a CLEAN message when 20 or more temporary errors occur. Why didn't IBM think of that?

I question the logic of cleaning 3480 drives, but not the media. Why clean the drives? Because they are dirty. Why are they dirty? Contamination from the cartridge media.

Tape maintenance equipment manufacturers contend that 90% of all tape problems are a result of contamination of the tape surface and that 80% of the contamination is from the tape itself. The physical damage inflicted on the 3420s, such as "z" folds, edge creases, high-speed rewind creases and reflector-spot impressions should not be a problem with 3480s.

IBM contends that adaptive cross-parity error correction should eliminate most errors. It has eliminated the majority of hard fails. But how many are hidden and corrected on the fly? Minor problems, which indicate future problems, are masked by a combination of better error recovery and the use of a buffer.

Data center managers agree that the 3480 is a tremendous improvement over the 3420's tape failures. By combining the drives with the media, the environment inconsistencies are reduced. The enclosed cartridge eliminates exposure to external contamination. The 3480 drives have limited contact with the physical media, thus reducing drive problems due to misloads or tension.

But contamination from the tape is going to grow, and a method is needed to identify that contamination and reduce or remove it.

I have seen data centers come to a screeching halt because of media failures. These problems don't happen overnight. I like to compare media failures with a serious problem I once had with carpenter ants. When I saw the first ant, I assumed it followed me in through the front door. When I saw the second, I thought, maybe the back door. When I spotted them daily and ran out of doors and excuses, it was too late.

Normally, carpenter ants are hidden inside your walls munching away, until one day the wall falls down — *then* you realize you have a problem.

Many data centers monitor software reports to identify the drive or media that caused a failure. This fixes the problem, but only after the fact. Many data centers are in the business of rebuilding the walls. Use a good exterminator before you see the ants. A regular maintenance program detects the first trace of the problem. Think of yourself as the exterminator and error correction codes as the ant trails.

Stitch in time

Many people in data centers argue it is cheaper to replace a tape than to run a maintenance program. Track records prove data centers that have eliminated media maintenance experience an increase in media failures. The performance decline happens gradually, not overnight.

Then, someone compares the increase in tape failures — and suddenly you wake up. What do reruns cost in time, money and frustrated users? What is the financial impact to your company or legal repercussions resulting from lost data? IBM acknowledges those concerns, but its idea of a maintenance program is physically dotting the media when failures occur.

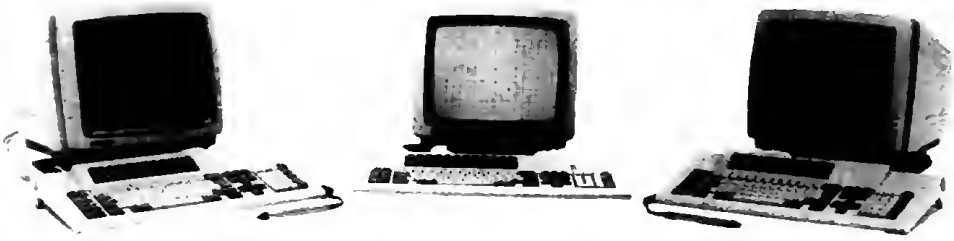
I believe in preventive maintenance for both drives and media. Your criteria should be based on age, use and failure standards, such as erase, temporary and permanent, that are acceptable and work for your data center.

Finally, if you spot any type of trend, don't ignore it or hope it will go away like my carpenter ants. They hibernate.

Rizziello is owner of Tape Library Consulting, a Yardville, N.J., firm specializing in computer tape library management.

On June 16th, IBM announced several NEW COAX A terminal products.

Beehive was already shipping theirs!



191D - A 3191D terminal product with three screen sizes.

191L - A 3191L product with enhancements and lightpen.

192F - A full color terminal with four screen sizes.

192L - A full color product with lightpen.

191E - A 3191E terminal with three screen sizes.

We also feature the following products in this family:

192D - A 3192D terminal with enhancements.

192C - A 3192C color terminal with enhancements.

191P - A 3191 terminal with a full black-on-white display.

Plus 15 other IBM system and plug compatible products!

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Customization — We go to unequaled lengths to satisfy your needs with changes as small as keycaps to as large as custom firmware or styled packaging.

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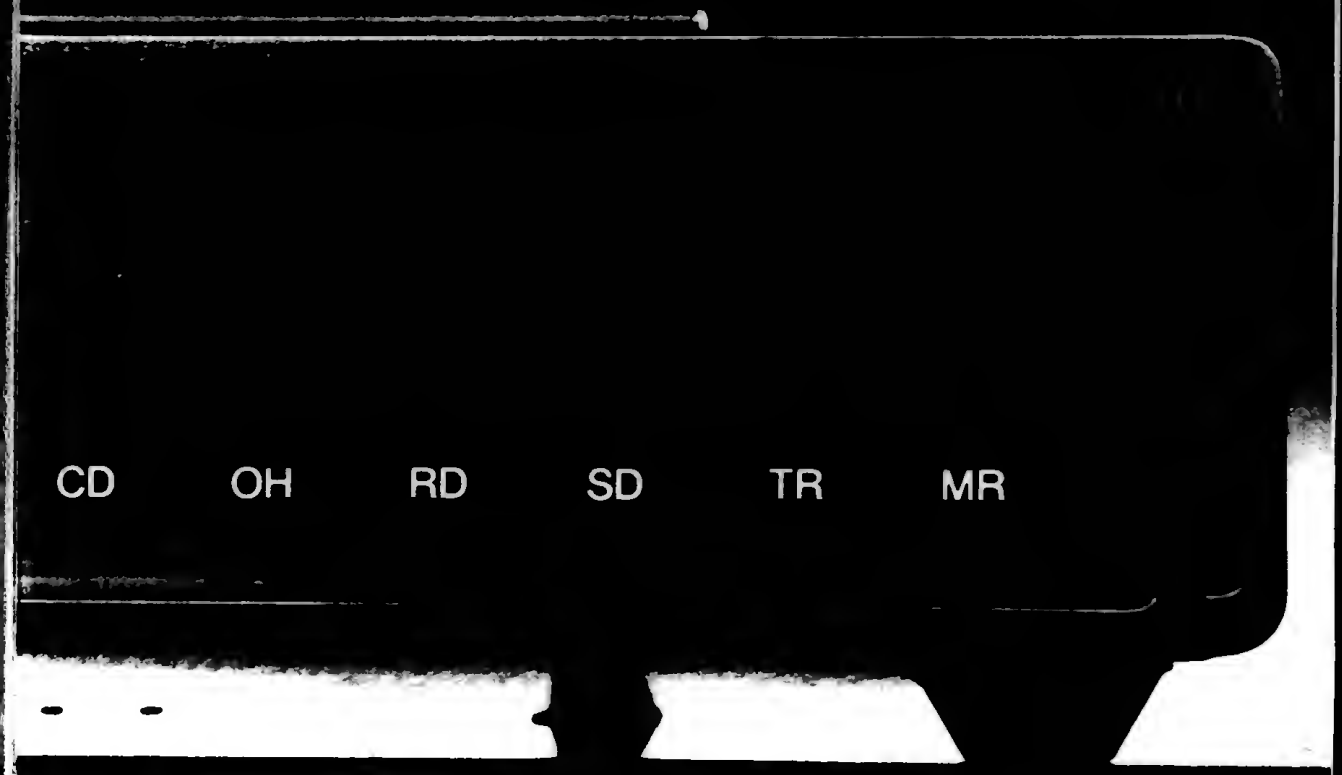

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NEW PRODUCTS

Processors

A computerized manufacturing inspection product said to incorporate gray-scale vision technology has been announced by **Itran Corp.**

The **MVP 2000** is a printed-circuit board with a 64-level gray-scale image processor at its core. It provides font- and character-quality verification and features 4M bytes of memory and eight full gray-scale image buffers. The vendor said it can make measurements to an accuracy of one part in 5,000.

The MVP 2000 is priced at about $20,000.

Itran, 670 N. Commercial St., Manchester, N.H. 03101.

Data storage

A removable shock-protected disk subsystem called the **Data Shuttle 2000** has been introduced by **MDB Systems, Inc.**

The Data Shuttle 2000 contains one or two disk canisters that provide shock isolation for 5¼-in. disk drives mounted within them. The systems can be provided with or without controllers with one or two disks. Each canister can house a disk with capacity up to 760M bytes of unformatted data.

The Data Shuttle 2000 is priced from $5,115 to $15,950, depending on disk drive and controller usage.

MDB Systems, 1995 N. Batavia St., Orange, Calif. 92665.

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Terminals

A high-resolution **monochrome** workstation featuring a system-addressable parallel **printer port** and IBM System/34, **36 and 38** compatibility has been unveiled by **Decision Data Computer Corp.**

The **3496 Workstation** consists of a 14-in. monitor, either a 102- or a 122-key keyboard and a small logical unit. The parallel printer port permits placement of a system-addressable, personal computer-graphics compatible printer adjacent to the workstation.

The 3496 Workstation costs $1,295.

Decision Data Computer, 400 Horsham Road, Horsham, Pa. 19044.

Printers/Plotters

A six-pen desktop color plotter for A- and B-size graphics has been introduced by **Fujitsu Component of America, Inc.**

Imagegraph is said to be fully compatible with Hewlett-Packard Co.'a HP 7475A. It features a Centronics Data Computer Corp. parallel port and an RS-232C serial port. It executes HP Graphics Language commands and plots on media such as paper, coated paper, transparency and polyester drafting film.

Imagegraph is priced at $1,200.

Fujitsu, 3320 Scott Blvd., Santa Clara, Calif. 95054.

An 18 page/min laser printer featuring 78 resident fonts has been announced by **Kyocera Unison, Inc.**

The **F-3010** offers seven printer emulations, including the NEC Corp. Spinwriter 3550, the IBM Graphics Printer and the Hewlett-Packard Co. Laserjet Plus. Other features include four port options and two paper trays.

The F-3010 costs $8,395.

Kyocera Unison, P.O. Box 3056, 3165 Adeline St., Berkeley, Calif. 94703.

Input devices

A family of scanners designed for converting line-art drawings into computer-aided design (CAD)-compatible or standard raster formats has been announced by **Ana Tech Corp.**

The scanner family, called **Eagle**, features a patented document analyzer for converting captured raster data to vector formats in real-time. Output is switch-selectable between raster and vector formats.

Prices for the seven Eagle scanner models range from $45,000 to $90,000.

Ana Tech, 10499 Bradford Road, Littleton, Colo. 80127.

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Will AI fit onto a PC?

Despite the 386, despite expanded memory, the debate rages on

BY MICKEY WILLIAMSON

Only two years ago, the artificial intelligence research community held the view that AI applications would never run on a personal computer. In fact, the community feared that to suggest such applications be thus downsized would bring about a return of the "AI Winter," a drying up of research and venture funding.

Today, however, the picture is very different. At the annual conference of the American Association for Artificial Intelligence held in Seattle last month, Patrick Winston, head of the AI laboratory at MIT, recalled a time in 1967 when "the world's biggest memory" — 1M byte — was installed in MIT's Digital Equipment Corp. PDP-6.

"By the standards of that time," Winston said, "the amount of memory that I carry back and forth to work every day on my PC would cost between $10 million and $20 million."

As far as hardware is concerned, today's generation of PCs possesses the performance characteristics, memory size and speed required for most AI applications.

Shatters myth

"If we ever felt there were some computational limitations to PCs, it seems to me that the 286 we see today goes a long way toward resolving that," says Larry Geisel, president and chief executive officer of the Intelligent Technology Group in Pittsburgh. "The 386 just totally shatters the myth of computational capacity," he adds, referring to Intel Corp's 80286 and 80386 microprocessor chips.

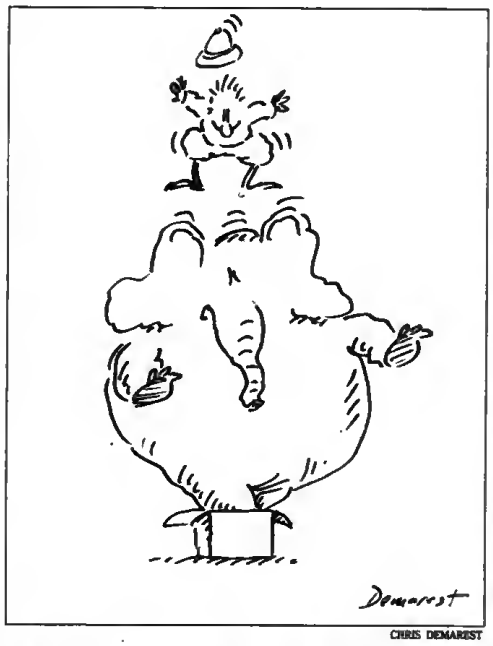
Not everyone in the industry shares that view, however. David Pensak, research supervisor for computer science at Du Pont Co., says, "It is a constant fight to get people to realize that someday even the 386 machines may not be sufficient for things that really have a big dollar impact on the company."

Pensak says he sees PCs as "great pedagogical tools, less intimidating by far than sitting down with a LISP machine or trying to learn Inference Corp.'s ART or Intellicorp's KEE system for your first time through."

But Pensak says he worries about systems that have no room to grow, saying that concern for upward migration should be of paramount consideration in any AI development project.

At the Carnegie Group, Inc., a Pittsburgh AI consulting and software firm, "We look at the 386 as being in an approximate class with a Sun workstation," says Lawrence Rostetter, vice-president of marketing and services, referring to Sun Microsystems, Inc.'s products. "They will have both memory capacity and disk capacity to take on some fairly serious applications."

But for the kind of manufacturing and industrial applications his company specializes in, Rostetter says, "Systems below the 286 don't have the horsepower, and, in many cases, the 386 in its current configuration won't do either, because it doesn't have enough memory."



CHRIS DEMAREST

The system at hand

Information systems organizations considering expert systems development can use the following guidelines when choosing a machine for development and deployment of AI applications:

- Make the system fit on existing hardware, if possible.
- Data base size and complexity are the governing factors when a company is considering natural language applications.
- All other things being equal, start with a PC for both development and deployment. PCs are less expensive and more accessible — therefore they are preferable if powerful enough for the application.
- Never lose sight of the possible need for upward migration.
- Security requirements, shared access or the need to deal with large or complex data bases may tip the balance away from the PC.
- The need for the expert

Williamson is a technical journalist and consultant based in Warwick, R.I. She is author of *Artificial Intelligence for Microcomputers.*

- **Pro: You can be clever with memory use**
- **Con: No room left to grow**
- **Step 1: What system do you have now?**

system — and the person who uses it — to travel from site to site weighs heavily in favor of a PC-based system.

• In any case, a detailed and realistic benefit analysis is called for, taking into account the possibility that intangibles may be a larger factor than in traditional application projects.

Beyond these simple guidelines, questions about the suitability of PCs for AI applications boil down to one set of considerations where natural language data base query is concerned and s somewhat different, more complex set in the case of expert systems. Some general considerations apply to both.

Most important is the kind of computing system already at hand. The goal is to make the technology fit in with the way the organization is structured, says Saj-nicole Joni, director of consulting services at Gold Hill Computers, Inc. in Cambridge, Mass.

"Given even the most powerful PCs, there are other things to look at," she says. "You have to understand how the corporation already does its work." If an organization needs to run departmental-level machines because that is how the company is organized, she explains, then any AI system will have to be delivered on that level machine. If the organization needs a knowledge base shared by many end users or one that raises major security requirements, it would be hard to deliver in a PC environment or a single-user workstation environment.

Whereas natural language processing systems always depend on the existence

of a data base, expert systems may or may not. They can, therefore, stand alone, accepting input data from external sensors, spreadsheets or a user. Or the systems can be just one part of a large application, most of which has nothing to do with AI.

Expert system story

Geisel's company is developing a set of expert system development tools, and his pro-PC view, understandably, reflects the expert system perspective.

The natural language viewpoint is somewhat different, as expressed by Larry Harris, chairman of Artificial Intelligence Corp. in Waltham, Mass., publisher of the mainframe product Intellect.

"Has the 386 changed anything? Not yet, but it will," he says. "Not yet because the address space limitation is still there until the real operating system [IBM's OS/2] comes out."

> "IF WE ever felt there were computational limitations to PCs, the 286 we see today goes a long way toward resolving that. . . . The 386 just totally shatters the myth of computational capacity."
>
> LARRY GEISEL
> INTELLIGENT TECHNOLOGY GROUP

Robert Keller, president of Renaissance International Corp., s Harvard, Mass.-based AI training and support company, says he believes otherwise, arguing, "If you're trying to do straightforward retrieval and presentation kinds of things, the PC is good enough. But the natural language products that are available for the PC are not outstanding." As Harris points out, the main function of a natural language system is to form a bridge between the user's conceptual view of data and the data base management system's logical view.

End users themselves can tell the natural language system what they want to know and let the software figure out how to write the query to the data base. While MIS concentrates on maintaining the data, self-sufficient end users put the data to work in running the business.

Most often, this kind of data retrieval and analysis depends on a large and complex data base — too large and too complex to reside on a PC. Sometimes it is possible to download a portion of the mainframe data base and use a PC-based natural language query system to frame the queries.

But, Harris notes, there is a Murphy's law of data query that says, "Whatever level of abstraction the data is stored at, the user wants some other level."

If data is stored at the transaction level, for example, the user wants a summary by product line or by region or by fiscal quarter. Training a natural language query system to deal with problems of that sort is a major task in itself, and the resultant lexicon may be too large for a PC to handle. Add to that the fact that most large data bases are shared by many users and that PCs are not yet very good at sharing data.

"As soon as you start sharing the data base, you're probably better off doing it on the mainframe, simply because, then, the MIS organization has better control over the lexicons and over access to the data," Harris says. Harris says he sees IBM 9370s and mid-range DEC VAX computers as ideal for this kind of application because they are made for departmental computing and can handle large data bases.

Just be more clever

All this is not to say that natural language systems have no place on a PC. "There isn't anything that says you have to use this much memory for a particular problem," says Jeff Von Limbech, author of Clout, a PC-based natural language from Microrim, Inc. in Redmond, Wash.

There are two kinds of data that might strain the memory capacity of an average PC. One is the set of system rules — the intelligence of the system itself — that the machine uses to interpret end-user queries. The other is the language's vocabulary of English words, including definitions, synonyms and alternate word forms (such as plurals and past tense).

Von Limbech acknowledges that Harris's mainframe-based Intellect language contains extra instructions to handle queries that are grammatically incorrect and somewhat cryptic. And, he says, "The thing that's hard to do is store a knowledge base that contains enough knowledge to let the system act intelligently. That's a problem on all systems, but it's aggravated on PCs."

But Von Limbech argues that product developers at Microrim short-circuited the problem by using a set of expert system rules that optimized the use of memory. That way, he says, Clout can achieve comparable results using much less memory.

Gary Hendricks is president of Symantec Corp. in Cupertino, Calif., publishers of Q&A, a PC-based natural language. He contends that vocabulary size is not a real obstacle to PC use either. "Forty percent of the writings of Shakespeare use only 100 of the most frequently used English words, and it falls off rapidly after that," Hendricks says.

Solution by default

Often, especially where inferencing technology is involved, the hardware choice revolves less around what is best and more around what is available. At Du Pont, where some 70 knowledge-based systems are in routine use and another 500 are in various stages of testing, about half run on PCs. The question, according to Edward G. Mahler, Du Pont's Wilmington, Del.- based manager of AI programs, has been answered "by default."

"The places where you don't use a PC for AI is where you have a minicomputer with a lot of terminals installed and people don't have PCs," he says. In the manufacturing world, that is how things are set up, Mahler says, so about half of Du Pont's applications are on terminals connected to minicomputers. "But not because they weren't doable on PCs," he says.

Today, despite limitations in hardware and software tools available, hundreds of serious-minded expert systems run on PCs in finance, engineering, manufacturing and even in the pure sciences. The following systems are all PC-based:

• Honeywell, Inc.'s technicians use a proprietary system called Mentor, which runs on laptop and transportable computers to guide them in performing maintenance procedures and low-level diagnostics on the air-conditioning equipment they service in the field.

• Beckman Instruments, Inc. provides scientists with Spinpro to help them prepare specimens for analysis using ultracentrifugation techniques and with Peppro to help them plan experiments in peptide synthesis.

• Cost center managers at Texas Instruments, Inc. use an expert system developed by the company's Defense Systems and Electronics Group to do the analysis and write the reports required to justify the purchase of capital equipment.

• Auditors for Coopers & Lybrand, the accounting and consulting firm, carry Expertax on their portable computers when they visit clients to aid in tax planning.

• Technology Applications, Inc., a Jacksonville, Fla., consulting company, deploys PC-based expert systems that

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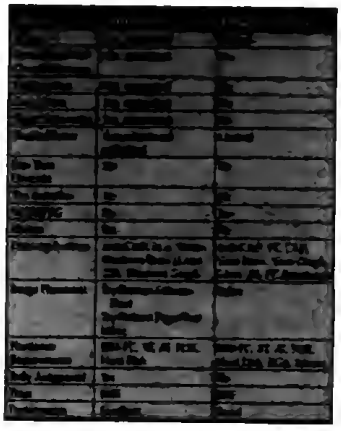

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perform tasks ranging from the scheduling of experiments for missions aboard the National Aeronautics and Space Administration's space station to generating the computer programs used by numerically controlled turning machines to cut cylindrical metal parts.

• Ford Motor Co. uses a PC-based expert system to monitor the application of vinyl side moldings in its Taurus automobiles.

Each of these systems is deployed on a PC for good reason. Some — such as Mentor, Expertax and the space station system — require a machine that is light and easy to transport. Others, such as Beckman Instruments' products, run when the only available computer is likely to be s PC.

However, not all of these products were developed on the machines on which they were ultimately deployed. Beckman's Phil Martz did the knowledge acquisition and rule writing for Spinpro on a Decsystem 20, while his partner, Matt Heffron, wrote the system's inference engine on a Xerox Corp. 1108.

The minicomputer-based system consisted of 1,100 rules, and Martz faced the task of condensing that knowledge into about 400 rules. He did this by generalizing from groups of specific rules. Now, he says, Spinpro "is running right at the edge of 640K bytes." Is the PC adequate for the job? "Yes," Martz answers, "just barely."

More often, however, expert systems development begins on the PC and migrates upward, either because the PC proves ton limited or because the ultimate users have terminals, not PCs, on their desks.

Harry Reinstein, president of Aion Corp. in Palo Alto, Calif., whose Aion Development System, a group of inference-based application development tools, runs on PCs and IBM mainframes, says the PC version has become a major portion of the company's product line for one reason: "People are telling us there is a tremendous economic advantage to building their mainframe applications on s PC and then porting them to IMS or VM or CICS for final testing and delivery," he says.

The price of admission

There are two good reasons to begin development on the PC, regardless of the machine targeted for delivery. The first applies to organizations that do not already own an AI development workstation. The price of admission to high-end AI development for a single programmer can approach a quarter of a million dollars, according to Intelligent Technology Group's Geisel.

Companies should plan to spend at least $40,000 for the workstation and an additional $30,000 to $60,000 for development software.

Add to that "a training cycle, the formal portion of which is at least two weeks spent sway from home, and the reality of which is up to a year spent in on-the-job training trying to figure out how to master the whole thing," Geisel says. "I'm sure there are some applications out there for which that investment is justified," he says, "but why limit yourself to only those spplications?"

But even in situations in which cost is not the issue, an effort should be made to develop on the PC those systems that will be delivered on that machine.

When you have spent six to 10 work-years developing an application, being told to rework it for s totally different en-

vironment is "quite a setback," says Steven Rausch, vice-president and general manager of Technology Applications, Inc. in Jacksonville, Fla.

The major hardware argument against using PCs — the lack of memory capacity — can often be overcome by adding expanded memory boards and using software designed to take advantage of the extra capacity.

On Microsoft Corp.'s MS-DOS, 30Mbyte disk storage capacity may be the limiting factor in cases in which the system must draw inferences about the contents of a very large mainframe data base if portions cannot be downloaded to the PC for reasons of data integrity or security or because the data is stored in a form not accessible to the PC.

Real-time limitations

But a more serious problem with PC-based expert systems concerns the software. Many low-end development tools are well engineered and surprisingly capable, but they may prove inadequate for some kinds of projects — where a response is required in real-time measured in seconds rather than minutes or hours, for example, or where highly complex kinds of knowledge representation and inferencing are involved.

But even that is changing. Technology Applications has started shipping Keystone, an MS-DOS-based development system with a look and feel very close to that of Intellicorp's KEE, which runs on high-end symbolic processing workstations. TI has produced a graphics extension to its Personal Consultant Plus that displays input from external sensors in dials and gauges in a manner similar to the active images feature of Inference's ART.

Gold Hill Computers' Goldworks furnishes a flexibility of knowledge representation schemes that can answer the needs of most complex knowledge bases. And even low-end development systems such as 1st-Class from Programs in Motion, Inc. in Wayland, Mass., Insight 2 Plus from Level Five Research, Inc. in Indialantic, Fla., and Exsys from Exsys, Inc. in Albuquerque, N.M., are meeting the needs of companies such as Du Pont in building expert systems that perform useful, if unspectacular, tasks.

'Their own way'

The best approach seems to be to put the expert system as close as possible to the ultimate user, on the machine with which the user is already familiar. Gold Hill Computers' Joni remembers cases in which portions of s mainframe-based expert system reside on PCs so that users can customize the system to their own way of doing things.

"You may have three different brokers who do things in three different ways," she explains. "It would be smart if the sys-

> "IT IS a constant fight to get people to realize that someday even the 386 machines may not be sufficient for things that really have a big dollar impact on the company."
>
> DAVID PENSAK
> DU PONT CO.

tem at their end could be customized to their working style, but you wouldn't want them touching other parts of the system. So it makes sense to distribute the end-user portion to their personal computers." There is, Joni adds, no threshold number of rules or processing speed that can be used to determine where the expert system should reside.

But it is often possible to free up mainframe processor time by making the expert system available on PCs. But, she cautions, "You can do it badly — that is, write a system where you download things onto the PC and the mainframe is still slow. But it's technologically possible to off-load processing to the PC."

When a large number of users are connected to the mainframe, she explains, "a lot of what the mainframe spends its time on is going around looking to see who is ready for it. There's a lot of waiting time, sitting and doing nothing, waiting for input." When the mainframe is near its capacity, she adds, an expert system's inferencing is much better done locally.

On the other hand, Katherine C. Branscomb, senior vice-president of marketing and sales at Aion, points out that many companies buy a mainframe to do a particular application and may run that mainframe just 60% or 70% of the time. "If they have extra capacity on the big box, then their incremental costs of running the expert system there rather than on the PC might be a lot less," she says.

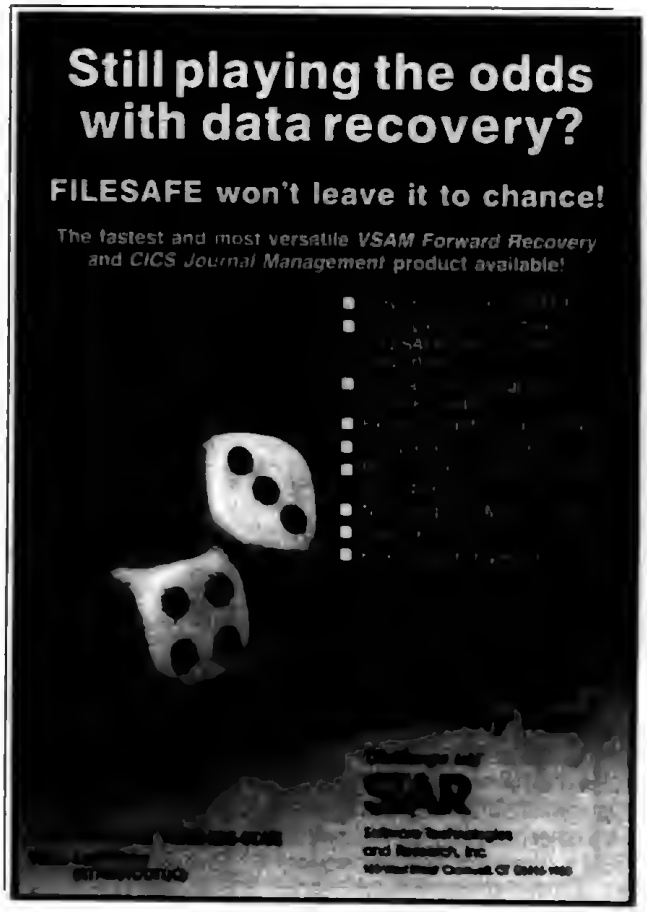
Choosing delivery vehicles

It seems clear that the technology is moving toward the day when inferencing techniques will be embedded in most business applications, and the question of their venue will be moot.

"One day, the term 'expert systems' will be like the term 'wireless telegraph,'" says Avron Barr, founder of Aldo Ventures, a Palo Alto, Calif.-based venture capital company specializing in expert systems applications.

Above all, Aion's Reinstein cautions, remember that there is no magic in AI technology.

There is undoubtedly s benefit in making machines better able to reason, but in truth, information systems organizations have for a long time been building applications that are extremely knowledge intensive. "Technology doesn't let you solve problems you don't know how to solve," Reinstein says. "It just changes the economics and the practicality of solving problems you do know how to solve." •



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Survival of the fittest

"There will be no information systems shop in 1992."

Thus spoke consultant Richard Dooley, president of The Dooley Group, earlier this summer. And thus say many others as well.

Dooley's remark made sense in its complete context, although it'a easy to misunderstand him. If we think of the MIS shop as a room full of boxes, Dooley may be right. The room full of boxes might disappear — by 1992, 1997 or whenever. But the MIS shop in the broader sense — the place where people deal with systems of information — will not disappear. It will become even more important than it is now.

Consider history. A few decades ago there were no dial telephones. A call from one extension to another down the hall had to be placed by an operator. Companies had rooms full of them.

Today, these rooms have been replaced by a few lonely souls. An observer who saw this coming might have predict-

Continued on page 61

Schwab feels MIS growing pains

Firm recruits with radio; DPers licensed as security traders

BY JAMES A. MARTIN
CW STAFF

SAN FRANCISCO — In recent years, Wall Street'a rising tides have continued to make waves for Charles Schwab & Co.'a information systems staff.

In order to keep up with the stock market fever as well as with its own enormous growth, the discount brokerage company is planning to double the size of its 250-employee data processing staff within the next 18 months.

Schwab managers face the formidable problem of building a strong information processing staff to manage the firm'a rapid expansion in a region where qualified programmers and other DP support personnel are scarce. The company is taking the unusual step of using radio and newspaper advertisements to invite those interested in an information processing career at Schwab to attend an open house.

"We're looking for more entry-level people at this point, because we like to promote from within," says Woodson M. Hobbs, executive vice-president of information systems.

Another initiative is to offer the DP staffers the chance to expand beyond the traditional roles of end-user support, programming, applications development and the like by encouraging them to become registered stock traders.

Of the 250 information systems staff, some 30 to 50 are registered traders, according to Hobbs. The goal is to allow the Schwab DP staff to better integrate with the end users, better understand their business and become more promotable in the process.

Woodson M. Hobbs

"In the information center, you deal with the financial traders and business analysts a lot, and it'a important that you understand their business," says Dawn Lepore, vice-president of Schwab'a applications development and support. "Being a registered trader also gives you more credibility with the end users."

Knowledge of the stock market and trading is helpful in designing sophisticated applications for traders and analysts, according to Sheri Anderson, vice-president of Schwab'a data center and one of the registered traders.

"I was able to do some planning and suggesting for applications rather than depending on the end users to come up with the ideas themselves," Anderson says.

It'a not a career change

So far, few if any of Schwab'a DP staff have moved over to stock trading full time, Hobbs says. "We do hire people from other parts of the company, and we would like to transfer people from information systems to other areas, but for the most part, computers are their career, and that'a where they tend to want

Continued on page 63

Data View

Electronics earnings

Data processing salaries as of March 1, with rate of increase from the previous year, as reported in a survey of members of the American Electronics Association

Position	Salary	Increase
Software development manager	$[illegible],404	4.8%
MIS manager	$[illegible],368	2.7%
Computer operations manager	$[illegible],364	3.8%
Senior systems analyst	$[illegible],692	3%
Intermediate systems analyst	$[illegible],244	4.4%
Computer operations supervisor	$[illegible],256	4.6%

INFORMATION PROVIDED BY THE AMERICAN ELECTRONICS ASSOCIATION
CW CHART

Back to school with Xerox: Recycling technical workers

BY DAVID A. LUDLUM
CW STAFF

ROCHESTER, N.Y. — Managers of a Xerox Corp. facility located near here are confronting a surplus of traditional technical talent and a need for computer professionals by "retreading" employees through an educational venture with a local university.

Through its Critical Skills Training Program, the Xerox Business Products and Systems Development Group in nearby Webster, N.Y., is attempting to boost the ranks of its computer professionals while avoiding layoffs and hanging on to valued employees.

Through the program, selected employees pursue a full-time, year-long customized program of study devloped by Xerox and

Continued on page 62

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Survival

CONTINUED FROM PAGE 59

ed the demise of the corporate telecommunications function.

Did the function die? Of course not. Hardware operation has been distributed to users. The telecommunications function is no longer as visible as it once was. Callers no longer need to involve their staffs in even the simplest of phone calls. But the function has not disappeared; it has evolved.

Today's telecommunications managers are concerned with new issues: selecting carriers, network topologies, statistical vs. time-division multiplexing and packet-switching services. Today's telecommunications managers function behind the scenes to all but a few of their customers. But their functions have a greater impact on the organizational bottom line than ever before.

Users taking over

The same is happening in MIS. Users are increasingly responsible for running their own systems. They have managed their own desktop micros for years. They are increasingly responsible for departmental computing as well.

The fraction of corporate computing power in central sites is steadily dropping. By 1992, or some other date, this fraction may approach invisibility. After all, how much computing power is needed to add up a division's profit-and-loss statements? By 1992, that much power will fit into a wristwatch. The day of gigantic mainframes tended by white-collar armies behind glass windows will go the way of operators asking, "Number, please?"

But this does not reduce the importance of the information systems function. Information processing hardware has become easier to deal with, but information itself has become more complex. Information processing today is vital to corporate life.

So it is with computers. No longer can computers be replaced by armies of clerks. Expert systems to configure superminis, computer-aided design systems to design very large-scale integration chips, "just-in-time" scheduling systems in an automobile plant — all transcend human ability.

There will always be a need for information specialists to create and monitor the information structures that make such systems possible. In fact, distribution of hardware power to end users makes specialists even more necessary; end users tend not to worry about such aggravations as data consistency and integrity.

What does this all mean? Tomorrow's MIS chief will be less of a data processing manager. Users will increasingly manage their own data processing. But the MIS chief's job will not disappear. The required skills will increase, not decrease. The title of chief information officer will become more descriptive of the facts. It is in managing information that MIS professionals can, should and will make their greatest contributions.

Today's MIS executives must prepare themselves to deal with this transition.

Mallach teaches at Boston College School of Management and is a consultant to top user and vendor executives. Much of his consulting work involves systems selection and competitive analysis.

Survey indicates MIS moving into OA role

Managers gradually accepting broader duties, responding to staffers' needs

MIS managers are increasingly involved with streamlining office operations as they belatedly take a leading role in office automation, according to a recent survey.

In a survey of members of the Data Processing Management Association, 80% said streamlining office operations is their key responsibility, according to the Office Technology Research Group (OTRG), which commissioned the survey.

That view reflects a growing involvement by data processing managers in office automation, according to John Connell, executive director of OTRG, which conducts research on behalf of corporate members.

Initially, DP managers sought to automate certain office operations by "pulling them out of the office and putting them in the data center" and shied away from close involvement with office workers, Connell said.

Controlling OA purchases

But over time, managers have gotten more involved with office automation through controlling purchases of equipment, he said.

"When you get out in the office, you have to concentrate on the work being done and the people," he said. "You have to know how the equipment is affecting business. Reluctantly, and now perhaps with a little stronger enthusiasm, MIS people are concerning themselves with how offices operate."

The survey also found that DP managers expect users to play a more active role in charting their companies' computer equipment strategies but not in more technical realms such as programming.

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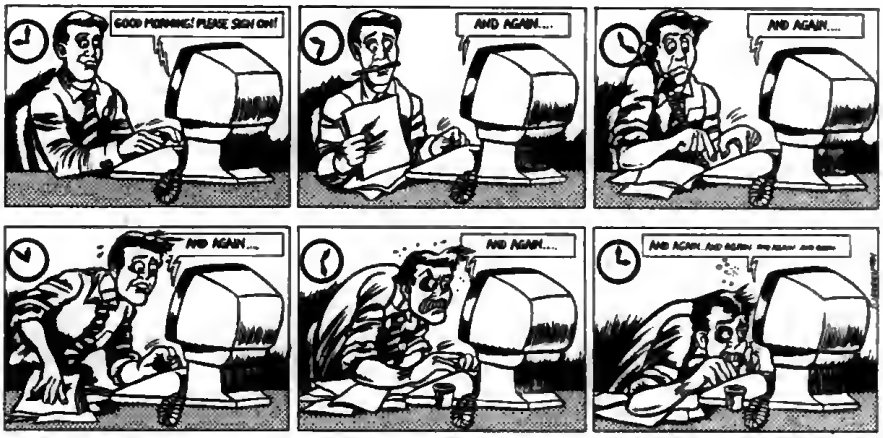

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Back to school

CONTINUED FROM PAGE 59

the Rochester Institute of Technology (RIT) and conducted by RIT faculty members, while continuing to receive their regular salary and benefits.

"They're Xerox employees. They just don't come to work," says Norman Deets, human resources manager for the Xerox group.

Most of the 41 workers who have completed the program are working in product development, although a few are in MIS, according to Deets.

The Xerox program is similar to one conducted by RIT and Eastman Kodak Co. a few years ago, although the 50 Kodak employees involved — generally chemists studying computer programming — worked part-time while studying for six months. Both efforts are similar to "bridge" programs RIT offers to the public to prepare students for graduate study in computer science.

The program has cost the Xerox group about $150,000, excluding the participants' salaries and benefits, for each of the three years it has been conducted.

Managers report positive results overall, although the programs engender obvious challenges in choosing which employees will be eligible and in hanging on to the ones who complete the studies.

Skimming the cream

"One of the problems with these programs is, it's difficult to choose the students for them. You've got to choose good ones, because they're the ones that will take to the training. But what manager wants to give up his best people?" says Peter Anderson, chairman of RIT's Computer Science Department.

"And it's delicate — who do you choose, and how do you choose them? That's hard on the managers," adds Anderson, who has conducted similar programs at the New Jersey Institute of Technology in Newark.

Kodak and Xerox both launched their programs in the wake of massive layoffs aimed at trimming their work forces in the face of sharp competition for mature markets from Japanese rivals.

Amid such layoffs, the offer to retrain current employees for computer careers rather than hire new workers avoids a further drain on employee morale, says Jean Lombardi, manager of Xerox's program.

The programs also allow overstaffed companies to make use of good employees while avoiding expensive "golden handshake" incentives for early retirements, Anderson says.

Xerox culled the 41 employees it has retrained since 1983 from about 200 applicants. Most of them had training in math, science or engineering and were working as mechanical engineers, chemists, designers and planners.

Xerox puts applicants through tests for aptitude and mathematics. Managers have found a strong correlation between math ability and success with the studies and that the chances of success for those without an engineering or other technical background are not great, Lombardi says. "It's a very intensive and kind of grueling program. It's not an easy thing to do," she says.

A Xerox manager must accept an employee for a specific position before the worker begins the studies. A "mentor" in the department in which the employee will work helps oversee his transition. Xerox regards the graduates as having completed undergraduate studies in computer science.

The program provides something "halfway between a major and a minor" in undergraduate computer science — sufficient preparation for pursuing a master's degree in the field at RIT, as some graduates of the program have done, Anderson says.

To date, only two of the 41 graduates of the Xerox program have left the company, according to Lombardi. One departure involved a family relocation, while the other represented "out-and-out thievery" of a worker by officials of another company who read an article describing his retraining, she says.

Executive hiring outlook murky

NEW YORK — Employers' demand for senior managers declined in the second quarter, and companies may hold off on hiring executives, according to Korn/Ferry International, a management search firm.

Demand for senior managers fell 5% from a year earlier in the second quarter, following a first-quarter gain of 12%, according to the quarterly survey.

In a statement, the firm reported "a continuance of high levels of hiring activity after two exceptionally strong quarters," with vacancies almost equally divided between new and existing positions. President Richard M. Ferry characterized that situation as an indication of confidence in the economy.

But Ferry cautioned that the long-term view is murkier. "We are starting to detect a growing concern among corporations about their future hiring plans. Many are rethinking plans for expansion and may be putting hiring plans on hold in the foreseeable future," he said.

Among industries, financial services was the dominant source of demand for executives, accounting for a record 32% of the total in the second quarter. Finance accounted for 19% of demand. Information systems accounted for 2%, changing little from recent quarters.

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Schwab

CONTINUED FROM PAGE 59

to stay," he says.

Schwab, which has 2,500 employees, is a highly visible brokerage firm that grew from $40 million in revenue in 1982 to $280 million in 1986, thanks to its role in pioneering the discount brokerage business, a stock market bull that has continued to rage and a successful marketing campaign that made Schwab a household name.

Schwab recently regained its independence from Bankamerica Corp. through a $150 million leveraged buy-out. After years of independence, it was acquired by the troubled banking company in 1983 but sought to chart its own course again last year.

In the past year, the company's host computer capacity has more than doubled through three installations.

Last summer, for example, Schwab's San Francisco headquarters ran its brokerage accounting, on-line order entry and corporate processing on two IBM 3090 Model 200s. In October, those mainframes were traded for one 3090 Model 400. In April, a 3090 Model 180 was brought on-line and was replaced in July by another 3090 Model 400. An IBM 3083 has been used in New York throughout.

Although Schwab has always been mainframe-oriented, microcomputers are playing a growing role in the company, especially IBM's new Personal System/2 line.

"Our philosophy was always, 'If it can be done on the host, do it,' " Hobbs says. "We're not strong proponents of local-area networks (LAN) either, because they're not host based." But the current mainframe cost of $130,000 per million instructions per second (MIPS), compared with $5,000 per MIPS on a personal computer, "means we've got to start moving toward PCs. We don't have any choice," he says.

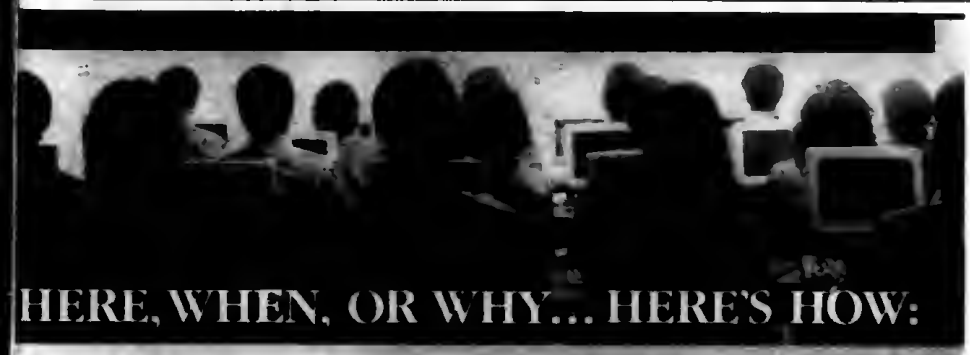
Chooses PS/2 as standard

Schwab currently has some 500 IBM Personal Computers, with one in each of its 120 branch offices. The company has ordered about 30 PS/2 Model 50s and says it plans to standardize on the Model 50 for all future microcomputer purchases. Later this year, it will be installing IBM's Token-Ring LAN on an experimental basis.

While the stock market is often hectic these days, it has slow periods as well, providing Schwab with some respite. "There's been so much momentum built up during the heavy periods that when it's a little quieter, we can finally finish projects that were started," Hobbs says.

"There are a lot of growing pains that occur during those periods, and when a lull comes, you stop hiring and catch up on projects and wait for the next busy period.

"That's probably not the ideal way to run a business," he adds, "but we're not allowed to tell the stock market how to grow."



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CALENDAR

AUG. 23-29

Image Scanning and Processing. Monterey, Calif., Aug. 23-25 — Contact: Gail Montgomery, Institute for Graphic Communication, 375 Commonwealth Ave., Boston, Mass. 02115.

Share 69. Chicago, Aug. 23-28 — Contact: Share, Inc., 111 E. Wacker Drive, Chicago, Ill. 60601.

Tex Users Group's Annual Conference. Seattle, Aug. 24-26 — Contact: Tex Users Group, c/o American Mathematical Society, P.O. Box 9506, Providence, R.I. 02940.

The Omni User Second Annual Technical Conference (on IBM's System/34, 36 and 38). Chicago, Aug. 25 — Contact: The Omni User, P.O. Box A 3031, Chicago, Ill. 60690.

The Computer and Automated Systems Association of the SME clinic on Voice Recognition Applications in Manufacturing. Chicago, Aug. 25-26 — Contact: Nancy A. Loerch, Society of Manufacturing Engineers, P.O. Box 930, One SME Drive, Dearborn, Mich. 48121.

First Conference on Speech Technology in Healthcare. San Francisco, Aug. 26-27 — Contact: Registrar, Institute for Medical Record Economics, 121 Mount Vernon St., Boston, Mass. 02108.

Software Contracts. Seattle, Aug. 27-28 — Contact: Registrar, Batelle Seminars Program, P.O. Box C-5395, 4000 N.E. 41st St., Seattle, Wash. 98105. Also being held Sept. 14-15 in Boston.

AUG. 30-SEPT. 5

The National Conference on Network Publishing. Dallas, Aug. 31-Sept. 2 — Contact: Interactive Features, Inc., 28½ Cornelia St., New York, N.Y. 10014.

Show CASE Conference II. St. Louis, Sept. 1-2 — Contact: Donna Skaggs, Center for the Study of Data Processing, Campus Box 1141, Washington University, One Brookings Drive, St. Louis, Mo. 63130.

Computer Aided Publishing CAP'87

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West. Los Angeles, Sept. 1-3 — Contact: Computer Aided Publishing CAP, Suite 200, 90 W. Montgomery Ave., Rockville, Md. 20850.

5th Anniversary PC Expo. New York, Sept. 1-3 — Contact: PC Expo, 333 Sylvan Ave., Englewood Cliffs, N.J. 07632.

Thirteenth International Conference on Very Large Data Bases. Brighton, England, Sept. 1-4 — Contact: VLDB 87, The Conference Department, British Computer Society, 13 Mansfield St., London, UK W1M 0BP.

SEPT. 6-12

Banque '87 — The 6th European Trade Fair for Techniques and Organization in Banking. Copenhagen, Sept. 7-9 — Contact: Bella Center A/S, Center Blvd., 2300 Kobenhavn S, Denmark.

SIBOS: SWIFT's International Banking Operations Seminar. Montreal, Sept. 7-11 — Contact: Euan R. Sellar, Public Relations Department, Society for Worldwide Interbank Financial Telecommunication S.C., Ave. Ernest Solvay 81, B-1310 La Hulpe, Belgium.

12th Annual National FSI User Conference. Dallas, Sept. 8-11 — Contact: Forum '87, Elizabeth Joyce, Marketing Coodinator, Suite 700, 2777 Stemmons Freeway, Dallas, Texas 75207.

Decworld '87. Boston, Sept. 8-18 — Contact: Public Relations Department, Digital Equipment Corp., 200 Baker Ave., Concord, Mass. 01742.

OSI Meeting for Government Users. Gaithersburg, Md., Sept. 9-10 — Contact: Joan Wywra, Room B218, Building 325, National Bureau of Standards, Gaithersburg, Md. 20899.

Financial Investment Management Exposition and Conference. New York, Sept. 9-10 — Contact: FIM Conference, Flagg Management, Inc., P.O. Box 4440, New York, N.Y. 10163.

1987 Capital Microcomputer Users Forum. Washington, D.C., Sept. 9-10 — Contact: Jackie Voigt, National Trade Publications, Inc., Suite 400, 2111 Eisenhower Ave., Alexandria, Va. 22314.

The Desktop Publishing Conference. Santa Clara, Calif., Sept. 9-12 — Contact: Seybold Seminars, 6922 Wildlife Road, Malibu, Calif. 90265.

Distribution/Computer Fall Expo '87. New Brunswick, N.J., Sept. 10-11 — Contact: C. S. Report, Inc., P.O. Box 453, Exton, Pa. 19341.

SEPT. 13-19

Vaulting the Barriers to EFT Success. Washington, D.C., Sept. 13-15 — Contact: Linda Munday, Electronic Funds Transfer Association, Suite 1000, 1726 M St. N.W., Washington, D.C. 20036.

13th National Conference of North American Honeywell Users. Cincinnati, Sept. 13-17 — Contact: Les Pacca, NAHU, P.O. Box 2037, Willingboro, N.J. 08046.

The First Annual Conference on Expert Sytems in Financial Institutions. New York, Sept. 14-15 — Contact: Institute for International Research, Inc., Suite 600, 9301 Wilshire Blvd., Beverly Hills, Calif. 90210

Atre Annual Forum on Data Base. New York, Sept. 14-16 — Contact: Atre International Consultants, Inc., P.O. Box 727, 16 Elm Place, Rye, N.Y. 10580.

Data Storage 87. Santa Clara, Calif., Sept. 14-16 — Contact: Forum Management, Cartlidge & Associates, Inc., Suite M-259, 1101 S. Winchester Blvd., San Jose, Calif. 95128.

7th Annual Conference on Control, Audit & Security of IBM Systems. Chicago, Sept.

[redacted]

14-17 — Contact: MIS Training Institute, 4 Brewster Road, Framingham, Mass. 01701.

Integrated Manufacturing Solutions '87. Long Beach, Calif., Sept. 14-18 — Contact: Intertec Communications, Inc., Building 33-34, 2472 Eastman Ave., Ventura, Calif. 93003.

1987 Electronic Printer and Publishing Conference. Miami, Sept. 14-18 — Contact: Jean O'Toole, CAP International, Inc., One Snow Road, Marshfield, Mass. 02050.

ICCC-ISDN '87 . . . Evolving to ISDN in North America. Dallas, Sept. 15-17 — Contact: International Council for Computer Communication, c/o Bell Communications Research Corp., Room 1B349, 290 W. Mount Pleasant Ave., Livingston, N.J. 07039.

CAM-I Industrial Automation Standards Conference & Workshop. Chicago, Sept. 15-18 — Contact: Annette Van Hauen, Computer Aided Manufacturing-International, Inc., Suite 1107, 611 Ryan Plaza Drive, Arlington, Texas 76011.

Workshop on Computer-Assisted Map Analysis. Corvallis, Ore., Sept. 16-17 — Contact: Joseph K. Berry, School of Forestry and Environmental Studies, Yale University, 205 Prospect St., New Haven, Conn. 06511. Also being held Oct. 24-25 in Berkeley, Calif.

Information Systems Consultants Association's Second Annual Conference and Consultants Market. Atlanta, Sept. 18-19 — Contact: ISCA, Inc., P.O. Box 467190, Atlanta, Ga. 30346.

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Interex North American Conference of Hewlett-Packard Co. Business Computer Users. Las Vegas, Sept. 20-25 — Contact: Interex Conference Department, 680 Almanor Ave., Sunnyvale, Calif. 94086.

Management Information Systems for Strategic Advantage. Philadelphia, Sept. 20-25 — Contact: Registrar, Office of Executive Education, 200 Vance Hall, The Wharton School, University of Pennsylvania, Philadelphia, Pa. 19104.

Systems Integration in Multivendor Environments: Dataquest, Inc.'s Business and Office Systems Conference. Littleton, Mass., Sept. 21-22 — Contact: Marina Pettijohn, Dataquest, 1290 Ridder Park Drive, San Jose, Calif. 95131.

Integrated Services Digital Networks. San Francisco, Sept. 21-22 — Contact: Customer Service, Frost & Sullivan, Inc. 106 Fulton St., New York, N.Y. 10038.

CD-ROM Expo. New York, Sept. 21-23 — Contact: IDG Conference Management Group, 375 Cochituate Road, Box 9171, Framingham, Mass. 01701.

Corpcon Corporate Microcomputer Exposition and Technical Conference. Los Angeles, Sept. 21-23 — Contact: Corporate Expositions, Inc., P.O. Box 3727, Santa Monica, Calif. 90403.

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COMPUTER INDUSTRY

INDUSTRY INSIGHT

James A. Martin

Small drives, big dreams

There are big expectations for the small hard disk drive industry.

The crystal ball, perhaps the most widely used technology in Silicon Valley today, reveals that sales of 3½-in. Winchester disk drives should reach $1 billion this year and should double in 1988 and again in 1989.

There's so much optimism about the smaller disk technology that pundits expect the 3½-in. disk to quickly surpass its big brother, the 5¼-in. hard disk, which is still largely the microcomputing standard.

Dataquest, Inc., for example, says shipments of 3½-in. hard disks this year will be 2.5 million units, compared with 6.1 million 5¼-in. disks. The tables will turn by 1990, however, when 8.9 million 3½-in. disks will ship, compared with 4.9 million of the larger disks, they say.

Wunderkind?

Perhaps the company most excited about this industry is Conner Peripherals. Barely two years old, the San Jose, Calif.-based firm is being touted by some as the emerging leader of the 3½-in. high-capacity hard disk drive market and *the* player to watch.

Finis Conner, chairman and chief executive officer, is known as a good salesman with a strong hard disk drive background that includes duty at Memorex Corp. and Shugart Associates, Inc., formerly owned by Seagate Technology, Inc.'a top man, Al Shugart. Shugart and Conner cofounded Seagate, but Conner left in 1985 over what were politely described as "creative differencea."

Conner built his company with some top former executives of Miniscribe Corp. and with the financial backing of Compaq Computer Corp. The company began shipping its first product last year, entered full production earlier this year and, after only some 18 months in busi-

Continued on page 72

Semiconductor firms battle on

Intel locks horns with AMD to block 80286 microprocessor production

BY JAMES A. MARTIN
CW STAFF

SANTA CLARA, Calif. — Intel Corp. last week deepened its legal dispute with Advanced Micro Devices, Inc. (AMD) by seeking to rescind AMD's licensing rights to Intel's 80286 chip.

Intel requested that Judge Barton Phelps, an independent arbitrator here, block AMD from becoming a second manufacturing source on the 80286.

The request was made immediately prior to AMD's announcement last week of its 16-MHz 80286 microprocessor, which is based on Intel technology. AMD said it plans fourth-quarter volume shipments of the chip, which is faster than Intel's 12.5-MHz 80286.

AMD also said the new chip is a less expensive alternative to the Intel 80386. AMD's pitch contends that, because new Microsoft Corp. operating software that will tap the full potential of the 386 will not be available until late next year, microcomputer vendors should be able to offer higher processing speed without the more expensive 386 chip.

Intel's action was the latest skirmish between the two Silicon Valley semiconductor firms. In April, Sunnyvale, Calif.-based AMD charged that Intel had not complied with the firms' 1982 technology exchange and second-source agreement. Intel, in turn, told AMD that it would terminate the 10-year agreement next year [CW, April 20] and become the single source for the 386.

According to Dataquest, Inc., AMD supplied 18% of the 2.74 million 286 units shipped in 1986, while Intel supplied 73%.

AMD Chief Executive Jerry Sanders said at a shareholders' meeting last week that AMD plans to vigorously fight Intel's efforts to cut the company out of the 286 and 386 markets.

Carnegie appoints Yablonsky CEO

BY JEAN S. BOZMAN
CW STAFF

PITTSBURGH — The Carnegie Group, Inc. last week formally named Dennis Yablonsky, the former president of Cincom Systems, Inc., as its new president and chief executive officer. Yablonsky, 35, had recently and suddenly announced his resignation from Cincom after 12 years of service [CW, Aug. 10].

Yablonsky's selection as president and CEO marks the end of an exhaustive six-month search conducted by Carnegie and Egon Zehnder International, a New York executive search firm, according to Mark Fox, acting president at the Carnegie Group.

Dennis Yablonsky

The Carnegie Group, with a projected $13 million in 1987 revenue and 150 employees, combines conventional manufacturing software with expert systems technology to create custom solutions.

Founded by four Carnegie-Mellon University professors in 1983, the firm has been without a president since February. At that time, three-year President Larry Geisel resigned to head a Control Data Corp. spin-off called Online Services. Geisel's new firm, since renamed Intelligent Technology Corp., also op-

Continued on page 68

CIS buy-out prompts CMI exec exodus

BY CLINTON WILDER
CW STAFF

BLOOMFIELD HILLS, Mich. — The top six executives of computer leasing firm CMI Corp. recently resigned after withdrawing their effort to block the sale of CMI to competitor Continental Information Systems Corp (CIS).

CMI President and Chief Executive Officer Edward Cherney, who has resisted the $50 million CIS buy-out since it was announced in late May, dropped his appeal of a recent court decision that upheld the sale of all CMI stock to CIS [CW, July 27]. Cherney's action removed the last hurdle for Syracuse, N.Y.-based CIS to acquire CMI and create the second giant player in

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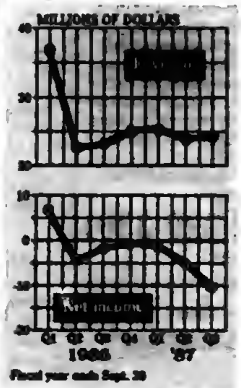
- 3Com says it will target large corporate users in 1988. Page 69.
- Teradata fares well in initial public offering. Page 70.
- Comtel completes acquisition bid for Equatorial Communications. Page 70.

Daisy Systems' star loses its shine

A downward slide

Daisy Systems' losses have mounted as sales have stayed flat



INFORMATION PROVIDED BY DAISY SYSTEMS CORP
CW CHART

BY JULIE PITTA
CW STAFF

MOUNTAIN VIEW, Calif. — Once considered a star performer and a pioneer in the market for computer-aided engineering (CAE) workstations, Daisy Systems Corp. has fallen far and fast in the past 18 months.

Although the $74 million on Daisy's balance sheet appears to be enough to ensure its survival, industry analysts say the firm faces a major challenge in regaining its momentum in the increasingly competitive CAE market.

Industry watchers say that Daisy's problems have not been the result of stiff competition but can be blamed on poor strategic decisions. "It wasn't the competition that killed Daisy," says David Wu, an industry analyst for S. G. Warburg & Co. "It was Daisy that hurt itself."

Daisy has watched its piece of the pie being nibbled away by firms like Mentor Graphics Corp. and Valid Logic Systems, Inc., resulting in six consecutive losing quarters for Daisy. Revenue has stagnated. Most recently, Daisy posted a $10.5 million loss for its third fiscal quarter ended June 30 on net revenue of $24.1 million.

Company officials, who declined to be interviewed, have said that Daisy will not return to profitability this year.

Founded in 1980, Daisy introduced its first product line, the Logician workstation series, in 1981. Targeted at CAE applications such as the design of printed-circuit boards, integrated circuits and application-specific integrated circuits, the Logician featured both proprietary graphics chips and a proprietary operating system called Maestro.

Although Daisy's Logician offered impressive applications for the engineering market, the software product line "lacked discipline," says Robert Herwick, industry analyst for Hambrecht & Quist, Inc.

"Different programs were written in different languages," Herwick says. "They were very author-unique. Integration and maintenance were very difficult as a result."

The decision to go with a proprietary system was key to the problems Daisy later encountered, industry watchers say. While Daisy pushed its internally designed Logician, its primary competitor, Beaverton, Ore.-based Mentor Graphics, opted to go with a standard platform.

Missed the change

Daisy "was pushing their own proprietary hardware as the industry was changing to standard platforms," Wu says. "As the industry moved to Unix, Daisy offered Maestro. They didn't change; they got caught."

Continued on page 72

U.S., Japan reach trade accord

BY MITCH BETTS
CW STAFF

WASHINGTON, D.C. — The U.S. and Japan recently reached a trade agreement intended to break down some of the barriers U.S. vendors face when trying to sell supercomputers in Japan's domestic market.

The accord between U.S. Trade Representative Clayton Yeutter and Japanese Ambassador Nobuo Matsunaga reforms the Japanese government's confusing and biased procurement rules, officials said.

However, industry sources said the agreement will produce only a few token sales and fails to address U.S. complaints about heavy discounting by Japanese vendors.

"I'm not optimistic. When they sell the machines and the Japanese take delivery, then I'll believe it," said Richard A. Shaffer, principal of Technologic Partners, a high-tech consulting firm in New York. He said efforts to open Japan's semiconductor and telecommunications markets have not been successful.

A spokesman for Cray Research, Inc., the Minneapolis-based vendor that has been trying the hardest to sell in Japan, called the agreement "a very positive signal." But, he said, Cray "still must wait and see what kind of enhanced business opportunities result from the agreement." Cray has about 65% of the worldwide market for supercomputers, but its share of the Japanese market is said to be 15% to 20%.

The reforms allow U.S. vendors to participate in the early stages of procurement, allow companies more time to prepare their bids and prohibit discrimination against U.S. products.

However, Yeutter acknowledged that the accord does not resolve complaints about price discounts of up to 80%, which Japanese firms offer to academic institutions. "Japan has expressed its intention to discuss with us the discounting activities of Japanese companies so that we can achieve a genuinely competitive market for supercomputers," he said.

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Yablonsky

FROM PAGE 67

erates in the Pittsburgh area.

While Yablonsky does not claim to be an expert on artificial intelligence, he does have expertise in marketing and manufacturing software, including Cincom's Control:Manufacturing package.

Although it is unrelated, Yablonsky's career move mirrors the 1986 job change of former Cullinet Software, Inc. President Robert Goldman. Like Yablonsky, Goldman received his management grooming under the founder of a mainframe data base software company, then left for the top post of a younger AI firm. Goldman is CEO of Artificial Intelligence Corp.

Perhaps the key qualification for the Carnegie Group was Yablonsky's proven ability to preside over the growth of a firm. "We wanted someone who could take us from where we are now to a company that is over the $100 million mark," Fox said.

Privately held Cincom's revenue went from $89 million in 1985 to a projected $120 million this year. Yablonsky had served in a variety of managerial roles since he joined Cincom in 1975; he became president in October 1984.

Yablonsky will have greater control over the Carnegie Group than he did over Cincom, he said. He will also have an equity position in the privately held firm — something he did not have at Cincom. "Everything that happens will be my call, and that opportunity did not present itself at Cincom," Yablonsky said.

Cincom founder and Chairman Thomas Nies and a group of longtime managers will run day-to-day operations. No organizational changes are planned.

3Com says large users top priority list

BY PATRICIA KEEFE
CW STAFF

SANTA CLARA, Calif. — 3Com Corp., recently outlining its market strategy, said it plans to focus strongly on the needs of large corporate users in 1988.

Those plans were further bolstered by last month's announced intent to merge with Bridge Communications, Inc., a vendor of terminal-to-host networks that relies on direct sales to users.

While speaking to a recent gathering of securities analysts, 3Com executives stressed the importance of providing communications outside the work group. 3Com has traditionally focused heavily on interdepartmental computing.

The network vendor's two-pronged strategy rests heavily on development of a corporate accounts program. Observers expect 3Com to take advantage of Bridge's direct sales force while maintaining a viable reseller organization.

Another key to the strategy is the planned introduction of 10 products in 1988 that will link 3Com's work group networks to the mainframe environment.

3Com is especially concerned about large accounts because it thinks those accounts are the opinion-setters for smaller accounts trying to decide between network options, said Nate Brookwood, the San Francisco-based director of industry services for D. H. Brown Associates.

The corporate accounts program will not involve direct sales but is designed to get 3Com resellers to focus more heavily on larger accounts by working closely with 3Com sales personnel.

Luring the heavies

To attract large accounts, 3Com is dependent both on providing its users with an upward migration path via Bridge products and next year's product line-up, which will likely include products based on Transmission Control Protocol/Internet Protocol, CCITT X.25 and IBM Systems Network Architecture, analysts said.

3Com President William Krause hinted that some of these products may be delivered through alliances or acquisitions. Krause said the first such announcement will involve a joint marketing agreement with Digital Communications Associates, Inc. but refused to elaborate.

D. H. Brown's Brookwood expressed concern about 3Com's relying too heavily on reselling products through third parties. "Large accounts want a single source, and a lot of retailers don't have the capability to perform complex system integration," he said.

EXECUTIVE CORNER

A. Daniel Pigott has been appointed vice-president of **NCR Corp.** and president of **NCR Comten, Inc.** He replaces William J. Gotschall, who has resigned to pursue other interests. Pigott will have overall responsibility for the general management of all NCR Comten communications products.

Pigott was previously general manager of NCR's Wichita, Kan., engineering and manufacturing center, a position he had held since 1980.

Software Publishing Corp. announced that **Janelle Bedke**, formerly chief operating officer, has been named president. In addition to managing research and development, marketing, sales and manufacturing, Bedke will now be responsible for finance and human resources. She will continue reporting to Fred Gibbons, who remains chairman of the board. Bedke ran the Mountain View, Calif., software firm for much of 1986 during Gibbons' recovery from a stroke suffered in late 1985.

Storage Technology Corp. announced that **William T. Treadwell** has joined the company as vice-president of Americas/Pacific operations. Previously, Treadwell was vice-president of federal systems for Zenith Data Systems, a subsidiary of Zenith Electronics Corp.

Scientific Computer Systems (SCS) has named **Barry Rosenbaum** president of the company. He reports to Jack Hugus, SCS's chief executive officer. Before joining SCS, Rosenbaum was vice-president of international operations for Convex Computer Corp. in Richardson, Texas.

Cordata Technologies, Inc. founder **Robert S. Harp** resigned as chairman and senior vice-president of product planning, reportedly over differences with Cordata's majority owner, the Daewoo Group. Harp founded the microcomputer firm as Corona Data Systems in 1981.

Artificial Intelligence Corp. of Waltham, Mass., announced the appointment of **Thomas E. Nelson** as vice-president of systems development. Nelson will play a key role in the development and release of the company's new IBM mainframe-based expert system shell. Nelson was with Cullinet Software, Inc. from 1974 to 1988.

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Contel finalizes Equatorial buy-out at $56M

BY JAMES A. MARTIN
CW STAFF

MOUNTAIN VIEW, Calif. — Equatorial Communications Co. agreed last week to be acquired by Contel Corp. in Atlanta for $56 million, or $3.75 a share.

Originally, Contel had offered Equatorial $4 a share but revised its offer to $3.50 a share, partly as a result of three outstanding shareholder class-action lawsuits against Equatorial. The two companies agreed on the final offer after further negotiations last week.

The three suits — two of which were filed in 1986 and the third earlier this year — alleged that Equatorial violated federal security laws by releasing misleading financial information to the public. The suits are still pending and are in the discovery phase, according to Osa Mok, assistant treasurer for Equatorial.

Another potential reason behind Contel's reduced offer, according to analysts, is Equatorial's recent financial reports. Equatorial just reported revenue of $14.1 million for the second quarter, compared with $13.9 million for the same 1986 quarter. The firm suffered a net loss of $2.6 million, or 17 cents per share, compared with a net loss of $3.5 million, or 24 cents per share, the year-earlier period.

For the first six months of fiscal 1987, revenue was $26 million, compared with $32.8 millionin fiscal 1986. Net losses were $5.9 million, compared with $3.6 million the previous year.

Kenneth Bomar, corporate spokesman for Contel, said the company was aware of the shareholder lawsuits and the net losses before the first offer was made last month [CW, July 13]. The revised proposal, which is about $4 million less than the original $60 million offer, is a result of Contel's continued assessment of Equatorial. "We're always studying a potential partner and trying to keep a current evaluation of where they stand," Bomar said.

Teradata offer drums up $68M

LOS ANGELES — Teradata Corp., a maker of data base machines, received a warm welcome from investors last week when it raised $68 million from an initial public offering.

Some analysts said they were surprised Teradata fared so well, in part because technology stocks had been getting a lukewarm reception in some recent initial public offerings. Also, Teradata's market of data base machines has been pegged with an uncertain future by many analysts.

Teradata's 3.4 million shares sold for $20 each, although it had been expected that the selling price would fall between $16 and $19. The closing price last Tuesday, the day the stock was offered, was $23.75 in national over-the-counter trading, while the high that day reached $24.25.

Of the shares sold, the company offered 2 million; other shareholders sold the remainder. Teradata's founders and a group of private investors still control approximately 76% of the company.

You're looking smarter than ever, MIS!

JCPenney Company's MIS department shares the inside story on creating a successful Executive Information System using an outside data service.

"We've actually had department heads from throughout the corporation walk into MIS and say, 'Hi! I like what you're doing and we need to get on your system.'

"All in all, I'd say we're on the right track," says Bill Friel, Vice President of MIS for JCPenney Company.

With a modest "We're on the right track," Friel sums up the tremendous success of JCPenney's Executive Information System (EIS), *now serving over 30,000 users.*

What's the secret to their success? And how can you make your department look as good when designing *your* system, the most visible MIS activity since introducing PC's to the Executive Suite?

The secret is that there's no secret at all.

Robert Capone, Senior Vice President and Director of Technical Operations, explains that when the EIS was designed in 1983, "We already had an extensive internal network. Our problem was how to improve the value of our existing decision support system.

"The obvious answer was to provide more of the information people really need. That meant adding external data, which led us to Dow Jones News/Retrieval."

Take the "easy way out."

Capone found that Dow Jones News/Retrieval offered an easy, economical way to integrate reliable external data.

"It's there, the systems exist. It's easy to integrate. It's not very expensive—less now than when we installed it. And it fits the needs of a very broad user base," he says.

Dow Jones News/Retrieval is an online information service of Dow Jones & Company, Inc., publisher of *The Wall Street Journal*. It offers over 40 business and financial databases, including exclusive online access to the full text of *The Wall Street Journal*.

Capone remembers, "We experimented with various means of dial-up connections, but they were not convincing."

Robert Capone
Senior Vice President

Robert Northam
Chief Financial Officer

Al Lynch
Director of Planning and Research

"You're looking smarter than ever, JCPenney," is more than advertising, it's how users throughout the company view their MIS department, and the EIS they've created. Dow Jones is a major reason it rates above average.

To guarantee absolute reliability, JCPenney Company pioneered the technology for connecting to Dow Jones via a dedicated line and worked out an attractive pricing structure.

Other corporations, such as ConAgra and IBM, have followed their lead.

"It wasn't very difficult at the time," Capone says. "Today it would be even simpler."

What are the users saying?

Capone uses the service daily as a kind of executive security blanket. "I take a few minutes in the morning to look at the headlines and make sure I'm well informed. It really starts the day off right."

But what do others outside of MIS think of the decision to bring Dow Jones News/Retrieval inside?

JCPenney's CFO, Bob Northam, agrees wholeheartedly: "It's very timely and simple to use. In meetings, I can easily call up figures for immediate on-the-spot analysis."

Al Lynch, Director of Planning and Research, calls it ". . .one of the most powerful tools in our system. Thank goodness for the corporate insider trading data. It showed us some things that influenced a major deal. It can pay for itself very quickly."

Heather May, a coordinator for new business activities in Lynch's department, uses Dow Jones News/Retrieval because ". . . I believe in gut reaction. When my instincts say 'go to Dow Jones,' that's where I go. It sounds like habit, but there's a reason it became habit: I've found it works."

"It's a definite necessity," says Raul Consunji, a financial analyst at the company. "There's a lot of credibility in the name 'Dow Jones,' and no way to get along on the job without it."

Holly Clemente, manager of the Investor Relations Department adds, "This is a great way to obtain information quickly. Without it, everything would be done manually, and that shouldn't be the case in this day and age."

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Capone sums up the bottom line: "I didn't have to promote it; the system sold itself. You put it up, and what's not to like?"

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CIS buy-out

CONTINUED FROM PAGE 67

independent computer leasing, behind Rosemont, Ill.-based Comdisco, Inc.

The acquisition will be finalized this week, said Paul Brooks, CIS's director of marketing. Although Cherney's resignation was not a surprise, Brooks said CIS was disappointed in the mass exodus of other top executives. "We had hoped that some would stay on in some capacity," Brooks said. Cherney could not be reached for comment.

The $350 million company is currently in limbo as it awaits a new management structure to be put in place by CIS.

CIS has a transition team headed by Vice-President of Business Development Robert Horstmyer on-site in Bloomfield Hills. "There is no central point of reporting right now," a CMI spokesman said.

Other CMI executives who resigned were Lloyd Marks, senior vice-president of marketing; Gary Smith, senior vice-president of markets; Frank Chartier, executive vice-president of financial services; Jim Feeney, senior vice-president and general counsel; and Dennis Grice, senior vice-president and chief financial officer.

The acquisition involves the transfer of CMI stock to CIS by the two majority owners of CMI, financial services firms Torchmark Corp. and Stephens, Inc.

Cherney's original suit had claimed that Torchmark and Stephens did not have the right to sell the 30% equity position held by CMI management. CIS announced last week that the Cherney-led management group reached a settlement with Torchmark and Stephens and conveyed its stock to the two companies.

The management group had originally offered to buy the company for $45 million, but Torchmark and Stephens agreed to the higher offer from CIS [CW, June 1].

CIS, which completed a successful stock offering earlier this year to raise cash, will also refinance $55 million of CMI's debt to Torchmark.

Graphic achievement.

New Harvard Graphics took on the competition at the National Computer Graphics Association's 1987 Shoot-Out, and won. Hands down.

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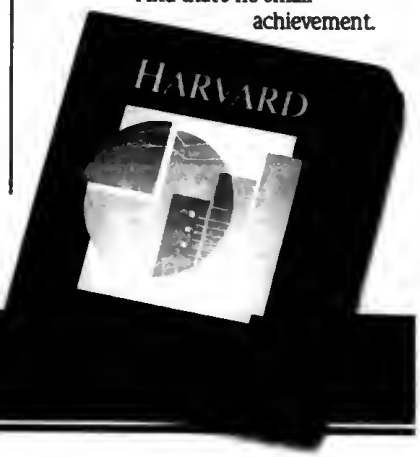

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Small drives

CONTINUED FROM PAGE 67

ness, had revenue of $20 million and net income of $1.5 million in its most recent quarter, ended in June.

Although Miniscribe is said to be the overall 3½-in. drive industry leader today, Conner Peripherals is on top of the high-end small-form-factor market and could very well take the top spot in the entire 3½-in. industry.

"Conner has an experienced group of people, they've done this kind of thing before and they're not about to make the same mistakes," said Phil Devin, a disk drive analyst for Dataquest.

But Conner Peripherals will have plenty of company in the market, notably old rival Seagate and Maxtor Corp. Maxtor recently announced a 170M-byte hard drive that tops Conner Peripherals' 100M-byte drive.

Conner's formula for future success is to stick with the product he knows as well as to expand his company's financing and customer base. Compaq today accounts for 75% of Conner Peripherals' total sales, with the rest divided among distributors. By next year, however, Compaq should constitute only about 50% of sales, with the remainder coming from distributors and other large OEM accounts that Conner is currently negotiating.

Conner says his company can do battle with its competitors on a price/performance basis by buying parts from overseas manufacturers and assembling the total product in San Jose. The Conner Peripherals drives are said to have more servo information in each data sector and fewer parts than their competitors, which keeps the products' costs down.

Despite the glowing expectations and optimistic crystal balls, it remains to be seen exactly how Conner Peripherals will meet the challenges it faces.

The 3½-in. hard disk is still several years away from widespread acceptance and implementation. Conner Peripherals currently has no plans for optical disk drive technology, which many of its competitors — including Seagate — are seriously investigating.

Most importantly, Conner Peripherals must acquire additional large OEM accounts if it is to survive and prosper. The firm must also be able to produce high-quality disk drives at competitive prices, and many observers speculate that Seagate could gain the upper hand here with its reputation for price competitiveness.

There's speculation that down the road, semiconductors with dynamic random-access memory and erasable programmable read-only memory could replace rotating memory. The 3½-in. hard disk may shrink to 2½ in., bringing manufacturing and engineering changes.

All told, the common denominator for success is how well Conner Peripherals — or any computer company, for that matter — watches its market and listens to its customers. And that makes crystal ball-gazing a very popular activity.

Martin is a *Computerworld* West Coast correspondent.

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COMPUTERWORLD
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Daisy Systems

CONTINUED FROM PAGE 67

By late 1985, Daisy was in turmoil. Mentor Graphics was able to capitalize on Daisy's mistakes, bringing with it a focused marketing approach, which Daisy lacked. While Mentor has concentrated its efforts on key accounts, "Daisy has had a quick-hit marketing approach," Herwick said. "There was a little too much smokestack-chasing rather than picking large key accounts."

For fiscal 1986, Mentor's sales reached $174 million while Daisy's lagged at $107 million. "Mentor is the market leader," said Rick Ruvkun, an analyst at Morgan Stanley & Co. "They were the only vendor to port their software to standard platforms, and that has given them the advantage."

Daisy has spent much of the last year and a half refocusing and restructuring. Last August, Aryeh Finegold, one of Daisy's three cofounders, was fired as president and chief executive. Replacing him as chairman and chief executive was longtime Daisy board member Max Palevsky, while Daisy cofounder Harvey Jones became president. Palevsky later relinquished the chief executive title to Jones, although he stayed on as chairman.

Musical chairs

Another shake-up occurred last April when Norman Friedmann, a former founder of data base software house Cordura Corp. and a Daisy board member, became chief executive as Jones left. Daisy recently began shipping a new family of Intel Corp. 80286- and 80386-based workstations, reversing the firm's strategy of using internally designed hardware.

In the mid-range, Daisy is considering the Sun Microsystems, Inc. Sun-3 and Sun-4 as platforms, sources said. Daisy is expected to reach an agreement with Sun sometime within the next nine months.

"If you support a broad line — IBM, Sun and the [Digital Equipment Corp.] VAX — you're a safe bet for the customer," Warburg's Wu said. "But, it'll take nine months for all those things to come together. Until then, they've got enough cash to keep them alive."

Hambrecht & Quist's Herwick said Daisy's road to recovery will be "a challenge" at best. "They've got all the things in place to turn it around," he said. "Can they grow back to be a $200 million company? That's the question for Daisy."

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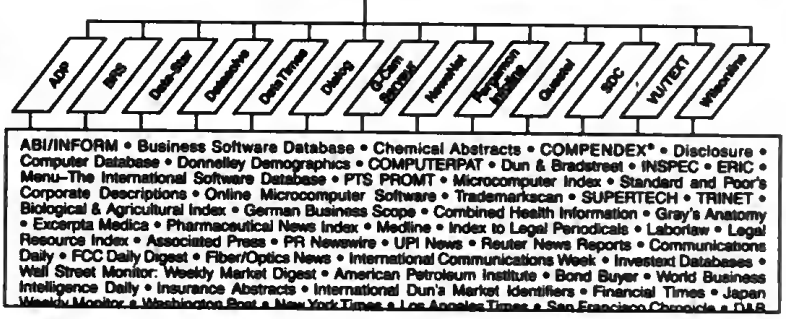

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EMPLOYMENT TODAY

Women making strides in MIS

Old chauvinism fading as young men attain management positions

BY ROSE MULA
SPECIAL TO CW

While opportunities for women in MIS are better than they were five to 10 years ago, many qualified women in the field still experience inequities.

Occasionally, a man will command a higher salary than a woman doing the same job, says Suzanne Gordon, MIS manager for SAS Institute, Inc. in Cary, N.C. "I don't think there is a conscious prejudice, but it sometimes exists," she says.

The sources of traditional attitudes about women in MIS are often the older men within the department. Younger male MIS professionals tend to treat women more equally, Gordon says.

Gordon attributes this trend to younger men having been conditioned through their experiences at college, where they had large numbers of women in their classes, to accept women as equals. "A few of the older men still have chauvinistic attitudes," she says. "But it's getting better because as the younger men grow into management positions, their philosophy is rubbing off on the diehards."

Whatever chauvinism remains, Gordon says, is quite subtle. "For instance, one of the older men might occasionally slip and call you 'Honey.' But all in all," she adds, "the situation is nowhere near as bad as in the engineering industry, which is still about 90% male."

Women also find it harder to achieve high-level management positions, says Beth Ranney, senior program director for the American Management Association and president of the Association for Women in Computing.

The reason for this difficulty is something Ranney calls "M&M" — marriage and maternity. "Companies perceive women as not being 'stayers,'" she says. "Not only do women leave jobs to get married and/or have babies; many switch careers."

In business for themselves

Until recently, women entering college were guided into the social services professions, Ranney says. Many found their positions unfulfilling and switched to business. But this switch resulted in even more disenchantment because of the less important and underpaid roles women were expected to play. Many women have left these business environments to start their own small consulting businesses.

"Most women in these consulting positions don't 'build' a company. They just make a position for themselves," Ranney says. The trend toward independent consulting strengthens the perception that women do not exhibit stability in the corporate environment. Because of this perception, Ranney says, she feels it's difficult for women to advance to management levels in MIS, even though equal rights legislation opened the door to entry-level positions.

> "A FEW OF THE older men still have chauvinistic attitudes. But it's getting better because as the younger men grow into management positions, their philosophy is rubbing off on the diehards."
>
> SUZANNE GORDON
> SAS INSTITUTE, INC.

Myrna Sameth, a past president of the Association for Women in Computing, is one of those women who left the corporate jungle to establish her own microcomputing consulting firm, Bentley Associates, in New York. "Most of my clients are small businesses, so I don't have a finger on the pulse of 'Corporate America,'" Sameth says. "But in the smaller firms, chauvinism and the old-boy network are alive and well, even though they're not acknowledged."

Good opportunities do exist for women in the MIS departments of small businesses, Sameth says, but male managers still talk about "the girls."

"You don't often see that in the corporate environment any more," she adds, "but that is mainly because they are trained not to act that way. So the question is, How much is indoctrination and how much is real?"

Room near the top

Despite the obstacles to attaining high-level positions, women can still achieve significant posts within MIS, says consultant Naomi Karten.

"Being in the right place at the right time and being good at what you do will get you a good job in MIS, whether you are male or female," Karten says.

Karten started her MIS career as a project leader for Blue Cross/Blue Shield of Massachusetts in the late '70s. "At that time, all the other project leaders were male," she says.

Her only problem was feeling a bit awkward in meetings. "Being the only female, I felt I had to be very careful about what I said because it stood out that much more," she adds.

Karten says she owes a great deal to the organization's open-minded managers who encouraged her to express her ideas and gave her valuable feedback and, more importantly, confidence.

She was eventually promoted to become the only woman among a dozen department managers. During the next few years, several other women joined the managerial ranks.

"I don't know if it was because they were becoming more aggressive and more able or because the company was trying to prove it wasn't biased — or maybe a combination of factors," Karten says. "But it was great to see so many of these capable women suddenly being formally recognized."

The key to success for women in MIS is to rely on their own ideas and qualifications and, above all, not to emulate men, Gordon says. "Women tend to respond intuitively to situations, as opposed to men, who typically respond pragmatically — and that is good," she says. "In my situation here, my boss has three women and two men managers reporting to him. The combination of our approaches to problems works out beautifully."

Mula is a Waltham, Mass.-based freelance writer.

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Product Development Group of highly respected software firm serving Fortune 500 and international businesses is seeking persons with minimum 3 years experience in design and implementation of business/manufacturing oriented systems to assist in development of new product. Position will include analysis, design, programming, testing, integrating, documenting, and initial installation of applications.

Located in Seattle's Eastside "High Tech Corridor." Small shop environment provides opportunity to apply a wide range of skills in state of the art technologies. Some travel required. Potential opportunity for transfer to Atlanta headquarters.

Candidates will have demonstrated ability to work in small team environment and good communication skills. Bachelors degree or equivalent experience required. Other desired skills: business/mfg experience, project mgmt, relational database (SQL), client support experience, "C", VAX/VMS, structured analysis/programming techniques.

Competitive salary commensurate with experience. Qualified candidates send resumes in confidence to: Suite #5013, 12700 NE 124th St., Kirkland, WA 98034

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COMPUTER SCIENTIST (SOFTWARE DEVELOPMENT) Develop & maintain highly technical software for complex communications systems via satellite. Position entails working with MACRO, COBOL, VAX/VMS, VAX 750, Protocol Rules of Communication, Queue Management Systems & Lock Management Systems, including specialized device drive systems to drive the simplex network. Minimum requirements: M.S. in Computer Science, or B.S. in Computer Science & 2 years experience as Software Development Computer Scientist. Other special requirements: University coursework & training should include 8 hours hardware classwork, & training or experience in Queue Management Systems, Lock Management Systems, MACRO, VAX/VMS, VAX 750, Protocol Rules of Communication. $29,000/yr. 40 hr./wk. Send resume to Colorado Division of Employment & Training, 600 Grant Street, Suite 900, Denver, CO 80203. Refer to Order # CO 2734071

Telecommunications Services Consultant

LINK Resources, the leading information services research firm seeks senior industry expert. Extensive knowledge of telecommunications services industry with an emphasis on market research, product development and strategic planning. Strong writing, presentation, communication and proposal writing skills. Five years experience in telecommunications required. Please send resume and salary history to Personnel Director, LINK, 79 Fifth Avenue, NY, NY 10003.

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SENIOR INSTRUCTOR

AMR Technical Training, a division of AMR Corporation, parent corporation of American Airlines, is seeking an ACP/TPF Sr. Instructor for its corporate headquarters in the Dallas/Ft. Worth area.

Primary responsibilities include designing, developing and delivering technical classroom instruction in ACP/TPF programming. Assist with programmer trainee and advanced training programs, delivering courses in ALC, VM/CMS, and ACP/TPF concepts and macros.

The successful applicant will have a minimum of 2-3 years ACP/TPF programming experience. VM/CMS and PL/TPF or SABRETALK experience a plus. College degree in computer science, math or education desired. Instructional experience preferred. Excellent oral and written communication skills are necessary. Some travel is required.

AMR Technical Training is one of the most dynamic Information Services Companies in the Nation, utilizing state-of-the-art PC interactive work stations for programming development. Our ACP/TPF training facilities utilize one of the largest mainframe computer installations in the world.

We offer an attractive benefits package with excellent career opportunities. Please submit resume, including salary history, in confidence to: **Supervisor, Personnel Services, P.O. Box 619666, MD 1341, D/FW Airport, TX 75261-9666.**

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We are a small, aggressive, Inc. 500 IBM System/36 Value Added Remarketer (VAR) specializing in debt collection and A/R management software. We sell to Fortune 1000 hospitals, utilities and retailers.

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You must be a quota breaker with mini-computer software sales experience and specific knowledge of hospital, financial or A/R management systems. Paid relocation to the Washington, D.C., area is mandatory.

Please call me at (703) 448-8400 to discuss this opportunity. Ed Robinson.

DEXEL SYSTEMS CORPORATION

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Immediate opening for experienced Programmer/Analyst for Data Systems. Three years experience as Business Application Programmer using COBOL on DEC VAX 785, 7XX with VMS operating systems experience required. B.S. degree, knowledge of Information Associate Student Information System, Human Resource System, Financial Records System Software and higher education experience desirable. Contact: Personnel Office, Brevard Community College, 1519 Clearlake Road, Cocoa, FL 32922, (305) 632-1111. EA/EO.

PROGRAMMER/ANALYST II

Two positions: 1. financial systems, 2. student systems. The College and University Financial System (CUFS) for general ledger, budgeting, purchasing, grants management, job costs, and inventory is installed at the university. Software package for student systems will be installed over the next 18 months. Environment is a VAX 8600/8650 cluster under VMS. Primary software tools: COBOL and 1032. Three years of COBOL programming and systems analysis experience required in financial or student systems. DBMS and VAX/VMS experience desired. A resume and letter of application must be postmarked by 9/11/87. Salary range: $19,900-$27,500. Apply to EO/Personnel, University of Montana, Missoula, MT, 59812. Contact Jim Lucke or Bill Smollnski at (406) 243-5455 for additional information. AA/EOE

Computer Software Engineer wanted to design and develop banking applications software for check processing and document processing using COBOL, DMS II, GEMCOS, Encoder Programming Language (EPLX) and Intelligent Reader-Sorter Language (IRSL) for use on UNISYS B1000 and A3 hardware; Requires Bachelor's degree in Mechanical Engineering or Computer Science and two years experience in job offered or two years related experience as a Programmer Analyst. $34,000 per year; 40 hours per week. Send resume to 7310 Woodward Ave., Room 415, Detroit, MI 48202. Ref. #39687 "Employer Paid Ad"

Programmer Analyst to be responsible for development of systems software solutions to problems in the Transactions Processing Facility Operating System (TPF2). Will also have direct responsibility for researching possible software solutions, present alternatives, make recommendations and finally develop, test and implement the solution. Must have working knowledge of IBM 3090, IBM 3480 and IBM 3880. B.A. in Comp Sci or equivalent "Equiv. means a Bachelors degree in a professional field such as Math, Business, Engineering, Physics etc.) & 3 yrs exp req. $34,200.00/yr. Job in Atlanta, Georgia. Send ad & resume to: CW-84848, Computerworld, Box 9171, Framingham, MA 01701-9171 no later than 9/2/87

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SYSTEMS PROGRAMMER

CW Transport, a major transportation company located in central Wisconsin, has an immediate opening for a systems programmer. Experience and qualifications should include a minimum of 2 years experience in operating systems programming on an IBM mainframe and a working knowledge of DOS/VSE, SP, CICS, ASSEMBLER, VSAM, VTAM, and ETAM. Send resume to:

Director of MIS
CW Transport Inc.
610 High St.
Wisconsin Rapids, WI 54494
Tel. # (715) 424-4000

EOE

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ROMAC.

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(207) 773-4749

Database Analyst for software developer in NW Ohio to design logical data models for storage of data required by company accounting systems, analyze business information requirements, create logical data models, database query & report generator systems; develop & document conceptual & detailed designs of computerized financial accounting & management information systems. No experience required. Must have M.S. in Computer Science with 2 graduate-level courses in Management Information Systems design; 3 graduate-level courses in Database Design; 1 graduate-level course each in Computer Architecture, Operating Systems, Digital Design, & Computer Networking; & 4 undergraduate courses in Accounting & Financial Reporting. 40 hrs/wk. $28,900/yr. Qualified applicants reply immediately with resume to R. Lechler, JO# 1083280, Ohio Bureau of Employment Services, P.O. Box 1618, Columbus, Ohio 43216.

SYSTEM DESIGNER

40 hrs/wk., M.S. or B.S. (plus 1 yr. exp) in Computer Science.

Design and develop system for inventory control communicating computers located in main office New York city and warehouse in New Jersey. Knowledge of ASSEMBLY, C, PASCAL.

$26,813/yr

Job Order Number NY8019267
D.O.T. code 012 167 066

Mail resume to:

NYS Job Service JO# NY8019267
250 Schermerhorn St. 3rd fl.
Brooklyn, N.Y. 11201

PROGRAMMER: Coding, programming, implementing & maintenance of acctg apparel related inventory control marker - making system & invoice system. 2 yrs exp. Must know: RPG2 & COBOL. $28,000/yr, 40 hrs/5 days/wk. Nygard Int'l, 1411 Bway, 4th flr, NYC 10018. Send resume.

Project Leaders

Artec Distributing, Inc., a national distributor of entertainment video, seeks several professionals to aid in the expansion of its MIS Department

The ideal candidate has:

- demonstrated experience leading systems development projects in a business environment
- 5+ years' programming experience
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- knowledge of business applications including order processing or distribution or service merchandising
- knowledge of TOLAS software helpful
- strong communications skills
- business degree or equivalent experience

Artec offers competitive salary and benefits. Our location, on beautiful Lake Champlain, offers year-round living to suit any lifestyle. Thirty minute drive to the best skiing in the Northeast. Its close proximity to Burlington International Airport offers easy access to Boston and New York City.

Please send your resume and salary requirements to: Human Resources, Artec Distributing, Inc., One Pine Haven Shore Road, Shelburne, VT 05482.

EOE M/F

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The professionals we seek must have at least one year of PACBASE™ experience plus:

- Application Development, using COBOL on-line with a major Database system such as IMS.
- Data Administration.
- Product development as Analyst or Programmer Analyst.
- Project Leadership or DP management.
- Teaching or Sales.

The position is challenging. The intellectual benefits that you will derive from working with PACBASE™ are exhilarating. At CGI, opportunity is open to you. You will have the chance to move up to management after 2 to 3 years.

We offer an excellent salary and benefits package. Please send your resume (NO phone calls, please) to DONNA WEST, MANAGER OF HUMAN RESOURCES.

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Industrial Engineers (GS-896-7, 9,11,12,13 and 14) will apply current industrial or systems engineering concepts and processes to evaluate and improve the design, implementation and operation of large-scale, integrated information systems and databases. Applicants are required to have a BS degree in a professional engineering curriculum. Salaries range from $23,866 to $59,488 depending on qualifications and experience.

To apply, send a resume or SF-171 to:

MILITARY SEALIFT COMMAND
Command Information Systems
ATTN: Code M-8X
5611 Columbia Pike
Falls Church, VA 22041

For further information contact:
Ms. C. E. Meeker, 703-756-1666

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SYSTEM CONSULTANT

Employee Benefits Division

LINCOLN NATIONAL CORPORATION has an immediate opening for a System Consultant in its Employee Benefits Division. The successful candidate will assume a leadership role in developing system architecture and system requirements to support its managed health care programs (HMO, PPO, and beyond).

Applicants should have 8-10 years experience and knowledge of multi-million products with broad mini and mainframe experience. Lincoln National seeks individuals with strong analytical and system decision skills for large, extremely complex or high-return projects. The position requires proven leadership ability and strong oral and written communication skills.

The salary is highly competitive and commensurate with background and experience. AGENCIES NEED NOT REPLY. Please send resume in confidence by August 31, 1987 to:

LINCOLN NATIONAL CORPORATION

Human Resources
Attn: Mr. Ron Flanagan
Corporate Data Processing Recruiter
1300 S. Clinton St., P.O. Box 1110
Fort Wayne, IN 46801

EOE M/F/H

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- IDMS ADSO
- DB2
- FOCUS
- 8100 CSP
- ADABAS NATURAL
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- 530 RPGII
- VAX VMS
- MSA
- CICS
- BAL/RPG
- HP3000/HP3000/HP1000
- DATA GENERAL
- BURROUGHS COBOL
- CICS (GENEVOL)

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Research Scientist - Development of a toolset to support the use of Ada in distributed real-time, embedded applications. Build a compiler to enable execution on distributed systems with heterogeneous processors. Research on the development of a domain based model for building dynamically reconfigurable distributed systems, definition of a formal model, a language and a methodology for utilization. Investigation of hardware intensive memory management schemes for real-time, embedded applications.

Requires M.S. degree in Computer Science. Requires 21 credits graduate level coursework or one year experience in design and implementation of a compiler for a high level language; distributed systems and implementation of algorithms, including the knowledge of at least one distributed programming language; operating systems, computer networks and network protocol implementation, Ada, C, UNIX computer languages. Computer Hardware, and design of computer architecture; computer system modeling and simulation techniques with knowledge of simulation languages. Salary $5,100 per month.

Submit resumes to: Mr. Robert Tibbetts, #7-12R, Minnesota Department of Jobs and Training, 690 American Center Building, 150 East Kellogg Boulevard, St. Paul, MN 55101

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Send resumes to: Regina at Recruiting Resources, PO Box 488, CW 817, Fern Park, Florida 32730-0488.

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CICS Install & Tune 1.7	$38,000
VM Russian Environment	$45,000
VTAM/NCP Monitor & Tune	$40,000
DOS/VSE Fortune 500 Corp	$32,000

ROBERT HALF
Data Processing
7730 Forsyth Blvd.
St. Louis, MO 63105
(314) 727-1535

INFORMATION TECHNOLOGY DEPUTY DIRECTOR

Position serves as Deputy Director for Data Processing and Telecommunications services for the Department of Information Technology, which is established by the Code of Virginia as the central management agency responsible for providing technology services to all branches of State Government. Major duties include: managing and directing the agency's Data Processing and Telecommunications service operations and hardware, software and telecommunications systems in support of customer agencies and institutions. Must have extensive knowledge and experience in the management of Data Processing and Telecommunications service operations. Exceptional interpersonal and communications skills are essential.

We offer excellent benefits and relocation assistance.

Salary range: $56,789 - $79,206.

All applications/resumes should reference position #IT132 and must be received by August 31, 1987. Reply to:

Department of Information Technology
110 South Seventh Street, Third Floor
Richmond, VA 23219
Attention: Personnel

EOE/M-F

DATA PROCESSING

Advanced Systems Division

DATA PROCESSING OPPORTUNITIES

At Northrop Advanced Systems Division in Pico Rivera, Southern California, centrally located amid the diverse recreational and cultural opportunities of Los Angeles, we're looking for experienced data processing professionals.

PROGRAMMER ANALYSTS—BUSINESS SYSTEMS

Requires at least 2 years of experience in a large IBM mainframe environment utilizing OS or MVS/XA, COBOL, TSO, ISPF, JCL, PANVALET and IMS DB/DC. Knowledge of COBOL, IMS, DYL/280, 4GL, structured methods a plus. Experience with one of the following systems required.

- **Manufacturing Systems:** Basic knowledge of Purchasing MRP, BOM, INV and SFC systems. Installation and enhancement of MRP II software packages desirable.
- **Financial and Administrative Systems:** Development and enhancement of cost control and configuration management systems using financial software packages.
- **Integrated Logistics Support (ILS) Systems:** Development and enhancement of ILS systems to support provisioning and material supply.

DATA BASE ADMINISTRATOR

Perform data analysis, modeling and normalization activities in support of a three-schema, data driven approach to application systems development. Develop logical and physical data structures, supervise test and production data base maintenance and support activities, provide data base performance analysis and tuning activities. Develop data base related standards and procedures.

Senior level and specialist level positions are available for individoals with at least 8 years data processing experience including IMS DB/DC applications analysis and programming, and 3-5 years recent background as a Data Base Analyst or Administrator in an IMS DB/DC and DB2 environment. Background including Manufacturing, Engineering and/or Logistics applications preferred.

For this position, please send your resume including salary history.

Please send your resume to: Steven Martin, NORTHROP ADVANCED SYSTEMS DIVISION, Employment Office, Dept. CW2522, P.O. Box 1138, Pico Rivera, CA 90660-9977. Northrop provides its employees with a competitive, comprehensive benefits package.

MODEM USERS: You can access a complete listing of career positions now available with your home computer and a modem. Dial **(612) 941-5723** and enter the password "Career Access" for 24-hour information. ***Bit settings: data 8, stops 1, no parity, full duplex 300/1200 baud, enter password (Career Access) (CR) upon entry.***

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Advanced Systems Division

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  - COBOL, PL/1, ASSEMBLER, FORTRAN
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  - VAX/VMS, DOS/VSE, VM, MVS
  - NCR environments

OUR SUCCESS IS OUR PEOPLE!

Please submit your resume to:

Robert D. Williams
Technical Resources Manager
Advanced Programming Resolutions, Inc.
2715 Tuller Parkway Drive
Dublin, OH 43017

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Design, develop, test, validate and implement expert support systems for managing crop production. Develop modular expert systems that interface with data banks (new, historic, textual or numeric), predictive models, decision aids, and with crop yield and cost/benefit projections. Build an open-ended framework of decision support software that can be appropriately revised and/or expanded. Focus on management alternatives for major Idaho crops, especially wheat, during development of prototype software. Draft tutorial materials and create and deliver an educational program on the use and application of the crop management decision support software.

Requires Ph.D. degree in a crop production or protection discipline; proven work experience and competence in expert systems, expertise with spreadsheet templates, economic analyses and crop growth and yield models; ability to work effectively with scientists, extension personnel and growers; resident visa - U.S. citizen or permanent resident.

Deadline for receiving applications and supporting material (letter of interest, goals and background, curriculum vitae, academic transcripts and three letters of recommendation) is October 1, 1987 or may be extended until a qualified candidate is selected. Inquiries should be addressed to: Dr. M.V. Wiese, CROPAID Search Committee, Department of Plant, Soil and Entomological Sciences, University of Idaho, Moscow, ID 83843 (208) 885-6650. The University of Idaho is an equal opportunity/affirmative action employer.

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- ADABAS
- S38 RPG ®
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- IBM Mainframes Manufacturing
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- CICS
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For the past 20 years we have been retained by several international billion dollar corporations to aid them in their search for DP professionals. In addition to our new data center client, we are also currently on search for 6 major southeast corporations who require various tools including LINC, MRPII, MOD 204, IMS DBA, CICS, and "C".

To explore these or other opportunities in the south, contact: **CRITERION, INC., Attn: Director of DP, 5420 Bay Center Dr., #108CW, Tampa, FL 33609, (813) 879-1214.**

INFORMATION EXECUTIVE

Capitol American, Cleveland's largest life insurance company has grown at a 40% compounded rate over the past decade and will grow another 45% this year. To keep pace with the information needs of a fast growing entrepreneurial company, we need to expand our ability to diagnose relevance from summary data. We are seeking a highly skilled MIS Consultant or Operations Manager to fill the newly created position of Information Executive. Reporting directly to the Senior Vice President of Operations/MIS, the Information Executive will need to demonstrate:

- Superior Analytical Skills.
- Verifiable achievements in an operations or "Big 8" consulting environment.
- Fluency in COBOL, D-Base III, LOTUS 1-2-3 and skill in relating PC's to mainframe. Artificial intelligence knowledge a plus.
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- Insurance background and working knowledge of statistics.
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The Information Executive will play a highly visible role in Capitol's continued 40% growth rate. Responsibilities will include:

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Sr. Vice President, Operations/MIS
Capitol American Life
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Cleveland, OH 44114

Senior Computer Systems Analyst wanted to analyze, design and develop various commercial applications such as Management Information Systems, Quantity Analysis, Financial Accounting, Sales Purchase Order Processing, Inventory Control, General Ledger, Accounts Payables, Accounts Receivables and Payroll Accounting for Manufacturing, Hospital Services, Advertising and Retailers Industry; transfer MS-COBOL source code to RM-COBOL and MF-COBOL using COBOL, BASIC and C languages, MVS/XA, MVS/SP, TSO/ISPF, OS/VS1, VM/CMS, UNIX, MS-DOS, DP/M, CICS/VS, BMS, SPF, EDF, Interest, IMS/VS, dBase III, Quickcode, Clipper, Lotus-123 software for use on IBM-4381, IBM-370, FORMATION-4000, UNIVERSE-68, IBM-PC's and CP/M hardware; Requires Bachelor's degree in Statistics, Management and Computers or Computer Science and two years experience in job offered or two years related experience as a Computer Systems Analyst. $36,000.00 per year. 40 hours per week.

Send resume to: 7310 Woodward Ave., Room 415, Detroit, MI 48202. Ref. #41887
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COMPUTER PROGRAMMER
Salary from $31,791-$46,970

Fairfax County Public Schools, a large metropolitan school system in Northern Virginia, has an immediate opening in their Department of Information Services, for a computer programmer. Interested candidates must possess a high school diploma, degree in a related discipline preferred. Strong IBM COBOL programming background is required. Seeking an individual who desires to build their application program experience in order to provide technical support in the areas of systems programming, systems software, hardware configuration, and system performance monitors. Strong written and oral communication skills are needed. Send resume with ID #710 by 8/31/87 to:

A. Pike
Fairfax County Public Schools
Department of Personnel Services
6815 Edsall Rd.
Springfield, VA 22151
EOE, M/F/H/V

COMMERCIAL SYSTEMS ANALYST. Responsibilities include development of Computer Systems for client contracts. Will be involved in analysis, design & coding of various computer programs. Responsible for enhancement & modification of existing systems. Responsible as called upon, for preparation of technical reports, special studies & manuals. Will, when necessary, supervise programmers & work closely w/client users to propose modifications to existing systems. Must have 2 yrs on job offered or 3 yrs exp as Programmer/Analyst. Exp must include work on large IBM type mainframes. Programming langs should include at least one of the following: COBOL, PL/1, Assembly. Exp with on-line systems using large scale data bases. 40 hrs/wk, 9-5. Salary $36,000-$40,000/yr. DOT Code 012 167 066. Mail resume to: NY State Job Service, JO#NY8012730, 97-45 Queens Blvd, Rego Park, NY 11374

PRODUCTION ENGINEER

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Jing Tech Inc
234 Amity Road
Bethany, CT 06525
Attn: Mr. Huang

Software Consultants

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ADEPT

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4341-1	0.88	2 to 4
S/38-600	[illegible]	8 to 16
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4381-11	1.4	4 to 16
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4341-12	1.65	2 to 16
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4381-13	3.6	[illegible]
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SYSTEMS	MIPS (Millions of Instructions Processed Per Second)	MEGABYTES
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4381-14	[illegible]	[illegible] to 32
3083BX	[illegible]	[illegible] to 32
#3090-120E	[illegible]	[illegible] to 128
†4381-24	[illegible]	16 to 64
[illegible]	[illegible]	8 to 32
3090-[illegible]	[illegible]	32 to 64
3081D	[illegible]	16 to 32
#3090-[illegible]	[illegible]	32 to 64
[illegible]	[illegible]	16 to 64
[illegible]	[illegible]	32 to 64
[illegible]	[illegible]	16 to 64
[illegible]	[illegible]	32 to 64
[illegible]	27.7	64 to 128
[illegible]	28.7	32 to 128
[illegible]	31.8	64 to 128
[illegible]	44.3	64 to 128
3090-400	50.0	128 to 256
#3090-400E	58.0	128 to 256
#3090-600E	76.0	128 to 256

First Installation 1987
† First Installation 1st Qtr 1988

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5850	[illegible]	[illegible] to 128
5860	[illegible]	[illegible] to 128
5867	22.8	24 to 128
5868	[illegible]	28 to 256
5870	[illegible]	32 to 128
5880	[illegible]	32 to 256
#5890-190E	22	64 to 256
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#AS XL-100	80	128 to 512

The above information is intended as a guideline for computer users on relative computer systems instruction cycle times. All data have been derived from published documentation and represent reasonable estimates of average MIPS ratings. However, Randolph is not responsible for the accuracy of the MIPS data. Cycle times will vary based on hardware software configurations and system manufacturers continually modify computer models as design improvements in hardware and software arise.

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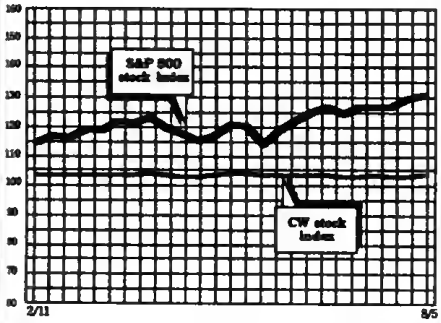

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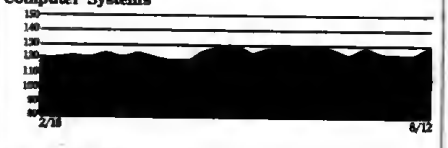
Communications

Computer Systems



Software and DP Services

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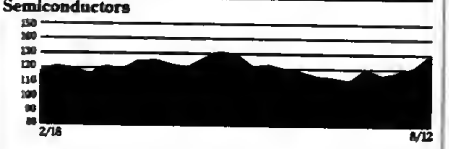
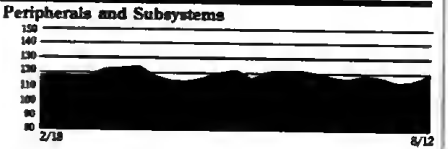


Peripherals and Subsystems



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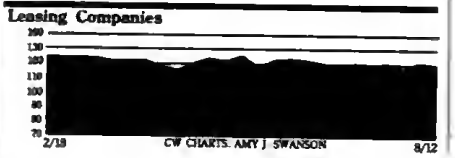

CW CHARTS: AMY J. SWANSON

Computerworld Stock Trading Summary

CLOSING PRICES WEDNESDAY, AUG. 12, 1987

Communications and Network Services

EXCH		52-WEEK RANGE (1)		PRICE CLOSE AUG. 12 1987	WEEK NET CHANGE	WEEK PCT CHANGE
N	AMERICAN INFO TECHS CORP	101	77	92.88	+4.1	+4.6
Q	ANDREW CORP	18	14	15.75	+0.5	+3.1
Q	ARTEL COMM CORP	5	2	2.88	+0.0	+0.0
N	AT&T	36	22	24.63	+1.8	+5.3
Q	AVANT GARDE COMP INC	7	3	4.25	+0.6	+17.2
Q	AVANTEK INC	19	13	15.00	+0.1	+0.8
N	AYDIN CORP	38	18	31.63	+1.0	+3.3
N	BELL ATLANTIC CORP	77	63	74.13	+5.1	+7.4
N	BELLSOUTH CORP	46	35	41.50	+2.3	+5.7
Q	BRIDGE COMMUNICATION	27	11	23.25	+1.3	+5.7
Q	COMPRESSION LABS INC	13	4	4.63	+0.3	+5.7
O	COMPUTER NETWORK TECH	7	4	3.75	-0.3	-7.7
O	CONTEL CORP	40	27	37.75	+1.3	+3.4
Q	DATA SWITCH CORP	9	5	6.38	+0.0	+0.0
Q	DIGITAL COMM ASSOC	49	16	37.50	+1.0	+2.7
Q	DYNATECH CORP	44	27	29.25	+0.6	+2.6
Q	EQUAFORAL COMM CO	6	2	3.25	+0.3	+6.3
Q	GANDALF TECHNOLOGIES	11	5	7.31	+0.1	+0.9
Q	GENERAL DATACOMM INDS	14	6	9.13	+0.5	+5.8
N	GTE CORP	44	34	44.00	+2.4	+5.7
Q	INFOTRON SYS CORP	13	7	9.25	+0.3	+2.8
N	ITT CORP	66	47	65.00	+1.3	+2.0
N	M A COM INC	16	12	15.50	-0.4	-2.4
Q	MCI COMMUNICATIONS CORP	9	5	8.63	+0.6	+8.5
Q	MICOM SYS INC	19	10	12.88	+1.1	+9.6
Q	NETWORK SYS CORP	16	9	11.38	+1.1	+11.0
N	NORTHERN TELECOM LTD	24	14	23.38	+1.6	+6.7
N	NOVELL INC	27	9	21.88	+2.6	+18.1
N	NYNEX CORP	75	59	73.88	+3.4	+4.8
N	PACIFIC TELESIS GROUP	31	23	28.88	+1.6	+5.5
N	PARADYNE CORP	9	4	7.63	+1.0	+15.1
A	PENRIL CORP	6	4	4.50	-0.4	-7.7
N	PLESSEY PLC	41	24	21.38	-0.6	-2.3
N	SCIENTIFIC ATLANTA INC	20	8	19.25	+1.4	+7.7
N	SOUTHWESTERN BELL CORP	42	33	41.00	+2.0	+5.1
Q	2 COM CORP	24	9	17.00	+1.3	+7.5
N	TIMEPLEX INC	41	19	33.75	+0.9	+1.8
Q	UNGERMANN BASS INC	19	7	9.75	-0.6	-7.1
N	U S WEST INC	62	45	56.13	+2.8	+4.8

Computer Systems

EXCH		52-WEEK RANGE (1)		PRICE CLOSE AUG. 12 1987	WEEK NET CHANGE	WEEK PCT CHANGE
Q	ALLIANT COMPUTER SYS	37	19	15.00	-2.8	-14.7
Q	ALPHA MICROSYSTEMS	7	3	6.13	+0.0	+0.0
Q	ALTOS COMPUTER SYS	17	10	13.50	+1.0	+8.0
A	AMDAHL CORP	44	17	42.00	+5.3	+14.3
Q	APOLLO COMPUTER INC	25	11	20.38	+1.1	+5.8
Q	APPLE COMPUTER INC	50	18	46.75	+5.5	+12.7
N	BOLT BERANEK & NEWMAN	30	19	21.63	+1.9	+8.1
Q	BRITTON LEE INC	5	3	3.50	+0.3	+7.7
N	COMPAQ COMPUTER CORP	65	14	53.25	+6.3	+13.3
Q	COMPUTER AUTOMATION INC	17	2	12.50	+0.8	+6.4
A	COMPUTER CONSOLES INC	12	7	7.50	-0.6	-7.7
Q	CONCURRENT COMP CORP	20	13	19.00	-0.8	-2.8
N	CONTROL DATA CORP DEL	35	21	33.50	+0.3	+0.9
Q	CONVERGENT TECH	12	4	7.63	+0.4	+5.2
Q	COMMAX COMPUTER CORP	22	9	18.75	-0.1	-0.6
N	CRAY RESH INC	136	69	111.38	+6.5	+6.2
Q	DAISY SYS CORP	12	7	7.75	+0.0	+0.0
N	DATA GEN CORP	36	25	34.50	+2.3	+7.0
N	DATAPOINT CORP	9	4	7.00	+0.1	+1.8
N	DIGITAL EQUIP CORP	184	66	182.12	+16.9	+10.2
N	FLOATING POINT SYS INC	17	9	10.38	+0.4	+3.8
N	GOULD INC	23	16	21.63	-0.1	-0.6
N	HARRIS CORP	43	27	39.00	+2.8	+8.0
N	HEWLETT PACKARD CO	68	37	67.63	+5.4	+8.6
N	HONEYWELL INC	91	56	89.75	+5.0	+5.9
N	IBM	172	119	170.38	+10.1	+6.3
Q	INFORMATION INTL INC	17	12	13.75	-0.3	-1.8
Q	IPL SYS INC	2	2	3.12	+0.3	+8.7
Q	MASS COMPUTER CORP	10	5	9.63	+0.9	+10.0
N	MATSUSHITA ELEC INDL LTD	176	91	175.63	+9.1	+5.9
Q	MEGADATA CORP	7	2	4.75	-0.3	-5.0
Q	MENTOR GRAPHICS CORP	34	13	33.75	+5.0	+17.7
N	NBI INC	14	9	11.88	-0.3	-2.1
N	NCR CORP	65	42	63.38	+5.9	+7.7
N	PRIME COMPUTER INC	30	19	26.12	+0.0	+0.0
Q	PYRAMID TECHNOLOGY	12	4	5.00	+0.3	+3.2
Q	STRATUS COMPUTER	41	18	29.75	+2.3	+8.2
Q	SUN MICROSYSTEM INC	48	12	36.50	+2.4	+7.0
Q	SYMBOLICS INC	9	4	4.38	-0.1	-2.8
N	TANDEM COMPUTERS INC	35	19	31.88	+4.0	+14.3
N	TANDY CORP	56	31	47.38	+1.1	+2.4
N	ULTIMATE CORP	31	13	20.63	+1.8	+9.1
N	UNISYS CORP	48	22	47.38	+3.0	+6.8
A	WANG LABS INC	19	11	18.38	+1.9	+11.4

Software & DP Services

EXCH		52-WEEK RANGE (1)		PRICE CLOSE AUG. 12 1987	WEEK NET CHANGE	WEEK PCT CHANGE
Q	ADVANCED COMP TECH	6	3	3.63	-0.3	-8.5
N	ADVANCED SYS INC	36	12	25.50	+1.8	+6.8
N	AGS COMPUTERS INC	22	6	19.88	+0.0	+0.0
Q	AMERICAN MGMT SYS INC	19	7	17.63	+1.0	+8.0
Q	AMERICAN SOFTWARE INC	22	9	17.50	+2.0	+12.9
N	ANACOMP INC	11	3	10.00	-0.5	-4.8
Q	ANALYSTS INTL CORP	9	3	9.50	+0.5	+6.3
Q	ASHTON TATE	20	12	25.25	+2.1	+9.2
Q	ASK COMPUTER SYS INC	17	10	14.88	+1.0	+7.2
Q	AUTODESK INC	285	10	27.63	+2.8	+10.5
N	AUTO DATA PROCESSING	52	30	50.63	+3.5	+7.4
Q	BOOLE & BABBAGE INC	12	4	11.00	+0.0	+0.0
N	COMPUTER ASSOC INTL INC	51	10	29.50	+3.3	+12.4
Q	COMPUTER HORIZONS CORP	19	10	13.38	+0.8	+6.9
N	COMPUTER SCIENCES CORP	61	20	58.38	+4.4	+8.1
N	COMPUTER TASK GROUP INC	19	11	12.38	+0.1	+1.0
N	COMSHARE INC	36	11	26.25	+2.0	+8.2
N	CULLINET SOFTWARE INC	13	6	12.88	+1.0	+8.4
Q	CYCARE SYS INC	12	7	9.75	+0.5	+5.4
Q	DUQUESNE SYS INC	33	12	19.00	-1.3	-6.2
Q	ENDATA INC	12	5	9.50	-0.4	-3.8
N	GENERAL MTRS (CLS E)	48	24	47.75	+4.8	+11.0
Q	HOGAN SYS INC	17	9	11.88	-1.5	-11.2
Q	INFORMIX CORP	23	7	21.00	+2.5	+13.5
Q	INTELLICORP INC	11	4	7.12	+0.1	+1.8
Q	KEANE INC	10	3	5.75	-0.5	-8.0
Q	LOTUS DEV CORP	37	11	32.75	+2.8	+9.2
Q	MANAGEMENT SCI AMER	21	11	12.13	+0.1	+1.0
Q	MICRO PRO INTL CORP	9	2	5.88	+0.4	+8.0
Q	MICROSOFT CORP	136	35	100.00	+2.8	+2.8
Q	NATIONAL DATA CORP	34	17	32.75	+1.0	+3.1
Q	ON LINE SOFTWARE INTL INC	22	6	20.00	+1.1	+8.0
Q	ORACLE SYS CORP	30	7	25.88	+2.4	+10.1
N	PANSOPHIC SYS INC	23	12	15.00	+0.5	+4.8
Q	POLICY MGMT SYS CORP	20	15	24.25	+0.8	+3.2
Q	PROGRAMMING & SYS INC	13	9	12.50	+1.3	+11.1
N	REYNOLDS & REYNOLDS CO	42	27	36.25	+1.8	+4.3
Q	SEI CORP	18	8	17.00	+1.3	+7.9
Q	SHARED MED SYS CORP	53	23	25.75	+0.0	+0.0
Q	SOFTWARE AG SYSTEMS INC	20	10	12.75	-0.3	-1.9
Q	SOFTWARE PUBG CORP	17	9	9.25	+0.5	+5.7
A	STERLING SOFTWARE INC	19	9	9.38	-0.9	-8.5
Q	SUNGARD DATA SYS INC	21	10	18.25	+1.3	+7.4
Q	SYSTEMATICS INC	20	14	26.75	+0.0	+0.0
N	UCCEL CORP	52	20	49.00	+5.1	+11.7
N	URS CORP	21	13	17.75	-0.1	-0.7
Q	VM SOFTWARE INC	45	15	18.50	+0.3	+1.4

Semiconductors

EXCH		52-WEEK RANGE (1)		PRICE CLOSE AUG. 12 1987	WEEK NET CHANGE	WEEK PCT CHANGE
N	ADV MICRO DEVICES INC	35	13	20.50	+2.4	+13.1
N	ANALOG DEVICES INC	24	14	22.38	+0.5	+2.3
Q	ANALOGIC CORP	13	10	12.50	+0.3	+2.0
Q	INTEL CORP	63	18	50.00	+3.1	+6.7
Q	LSI LOGIC CORP	17	8	11.88	+1.1	+10.5
Q	MONOLITHIC MEMORIES INC	19	10	17.63	+2.0	+12.8
N	MOTOROLA INC	86	34	64.63	+6.0	+10.2
N	NATL SEMICONDUCTOR	17	8	15.00	+1.4	+10.1
N	TEXAS INSTRS INC	70	35	68.88	+8.0	+4.8
A	WESTERN DIGITAL CORP	33	13	27.75	+0.0	+0.0

Peripherals

EXCH		52-WEEK RANGE (1)		PRICE CLOSE AUG. 12 1987	WEEK NET CHANGE	WEEK PCT CHANGE
N	AM INTL INC	8	6	7.88	+0.0	+0.0
Q	AST RESH INC	23	11	18.13	+1.1	+9.6
Q	AUTO TROL TECH CORP	8	3	6.63	+0.1	+1.9
Q	BANCTEC INC	16	8	12.75	+0.1	+1.0
Q	CIPHER DATA PRODS INC	16	9	10.25	+0.6	+6.8
Q	COGNITRONICS CORP	5	2	3.88	+0.0	+0.0
N	COMPUGRAPHIC CORP	25	16	24.75	+1.6	+6.9
N	COMPUTERVISION CORP	23	12	15.88	+1.4	+9.9
N	CONRAC CORP	20	12	0.00	+0.0	+0.0
A	DATAPRODUCTS CORP	16	10	11.75	+0.4	+3.3
A	DATARAM CORP	10	7	7.38	+0.3	+2.8
N	DECISION INDS CORP	13	7	11.13	-0.1	-1.1
N	EASTMAN KODAK CO	101	82	98.75	+3.5	+3.7
Q	E M C CORP MASS	37	11	36.25	+1.5	+4.3
Q	EMULEX CORP	10	6	7.75	+0.3	+3.3
Q	EVANS & SUTHERLAND	40	20	34.00	+3.3	+10.8
Q	ICOT CORP	13	5	8.25	+0.4	+5.4
Q	INTERLEAF INC	20	8	18.88	+1.3	+8.0
Q	IOMEGA CORP	12	2	3.25	-0.1	-3.7
Q	LEE DATA CORP	10	6	5.13	-0.1	-2.4
Q	MASSTOR SYS CORP	6	2	4.56	-0.1	-1.3
Q	MAXTOR CORP	24	12	14.00	+0.3	+1.8
Q	MICROPOLIS CORP	44	14	37.25	+1.6	+4.5
Q	MINISCRIBE CORP	19	5	15.25	+1.3	+8.9
N	MINNESOTA MNG & MFG CO	80	50	79.50	+5.6	+7.6
A	MSI DATA CORP	19	10	16.38	-0.6	-3.3
Q	PRIAM CORP	6	2	4.00	+0.6	+16.8
Q	PRINTRONIX INC	14	10	12.00	+1.8	+14.3
N	QMS INC	22	11	21.12	+2.9	+15.8
Q	QUANTUM CORP	35	15	17.50	+0.5	+2.8
Q	RANTEK CORP	6	4	5.50	-0.1	-1.1
N	RECOGNITION EQUIP INC	27	11	19.38	+0.4	+2.0
Q	REXON INC	14	5	10.25	+0.9	+9.3
Q	SCAN TRON CORP	17	11	12.50	-0.3	-2.0
Q	SEAGATE TECHNOLOGY	46	12	31.13	+1.0	+3.3
N	STORAGE TECH CORP	5	2	3.38	+0.0	+0.0
Q	TANDON CORP	7	2	4.00	-0.5	-11.1
A	TEC INC	7	2	4.81	-0.2	-3.7
N	TEKTRONIX INC	43	38	39.50	+0.8	+1.9
Q	TELEVIDEO SYS INC	3	2	3.06	+0.5	+19.5
N	TELEX CORP	102	55	63.38	-1.3	-1.9
Q	WYSE TECH	35	13	21.38	+0.5	+1.8
N	XEROX CORP	81	51	79.38	+5.1	+6.4
Q	XIDEX CORP	20	11	13.88	+0.6	+4.7

Leasing Companies

EXCH		52-WEEK RANGE (1)		PRICE CLOSE AUG. 12 1987	WEEK NET CHANGE	WEEK PCT CHANGE
N	COMDISCO INC	33	19	30.88	+2.6	+9.3
N	CONTINENTAL INFO SYS	14	7	11.50	-0.6	-5.2
Q	PHOENIX AMERN INC	9	3	4.25	-0.3	-5.9
Q	SELECTERM INC	7	3	5.25	-0.4	-6.7
N	U S LEASING INTL	55	40	54.25	+1.3	+2.4

EXCH: N=NEW YORK; A=AMERICAN; Q=NATIONAL; O=OVER-THE-COUNTER; S=SPLIT

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Raging bulls

DEC, IBM charge to new highs; many others also reach year's peak

The bulls were everywhere last week as the Dow Jones industrial average careened up 99 points in four days, and computer industry stocks reaped the benefits.

Setting a torrid pace was Digital Equipment Corp., which blasted through its previous high for the year (174½) to close Thursday at 183½, up 12⅝ points for the week. IBM held its own, rising 9 points to a new high of 173⅜.

Thirteen computer-related stocks reached new highs for the year in Thursday's trading on the New York Stock Exchange. They included Cullinet Software, Inc., which closed at 13; Unisys Corp., 47¾; Automatic Data Processing, Inc., 52⅝; Hewlett-Packard Co., 69; MAI Basic Four, Inc., 21; and The Ultimate Corp., 31⅜. Apple Computer, Inc., which introduced several Macintosh products, rose to a new high of 49.

Data General Corp., despite its announcement that it will take a $26 million charge in the current quarter, was up 2¼ points to 35¼. Among other minicomputer vendors, Prime Computer, Inc. gained just one-eighth of a point to 27⅜, while Wang Laboratories, Inc. rose three-quarters of a point to 18½.

CLINTON WILDER

Firms enhance peer-to-peer SNA

Third-party vendors in the IBM community are gearing up for peer-to-peer Systems Network Architecture (SNA).

The following is a rundown of some of their activities.

• **Netlink, Inc.** has started working on its own PU2.1 implementation, which will fit its network concentrator for two roles, according to spokesman Richard Buckle.

First, the box can reportedly be a low-cost network node that performs routing among PU2.1 devices. Second, it can perform mapping between PU2 and PU2.1 protocols so that IBM 3274 controllers can communicate over a PU2.1 backbone network, Buckle said.

• **NCR Comten** is committed to duplicating IBM's expected new Network Control Program within approximately a year after it is shipped, according to Eric Birkeland, the company's director of product marketing.

• **Communications Solutions, Inc.**, which already offers both LU6.2 and PU2.1 software, has been waiting for IBM to extend support of those protocols further into its mainframe environment, according to John Pickens, senior communications architect.

He said Communications Solutions expects that its existing products will communicate with IBM's LU6.2 VTAM implementation, but the company is ready to do any necessary reprogramming.

• **Systems Center, Inc.**, which sells VTAM-based bulk data transfer software, said it will also provide an LU6.2 version of its VTAM-based bulk file-transfer product shortly after IBM's VTAM-based LU6.2 ships — which should be sometime in the third quarter of 1988.

• **Cincom Systems, Inc.** said it plans to bring out an LU6.2 version of Netmaster, which is a direct competitor with IBM's Netview network management system, around the same time.

Cincom has been making its own slew of announcements to ensure that Netmaster is at least a match for Netview in a distributed SNA environment. The company introduced an IBM 9370 VM version of the network management system several months ago, anticipating IBM's June 16 announcement of a 9370 version of Netview.

The 9370 version of Netmaster also can perform the same basic roles as the 9370-based Netview, acting either as a local network management system or passing alerts from the local network onto a central host, Cincom said.

Another Netmaster enhancement under development is a background-mode capability that will allow the operator to respond to a problem on the network while continuing to simultaneously record incoming alarms and alerts, according to Vicky Duckworth, Cincom senior product manager.

ELISABETH HORWITT

IBM prepping NCP for the future

Program will support added SNA capabilities; 9370 links enhanced

BY ELISABETH HORWITT
CW STAFF

IBM plans to bring out a new version of the Network Control Program (NCP) that will support several important Systems Network Architecture (SNA) networking capabilities that were announced in June but cannot be used with the current NCP, IBM recently told *Computerworld*.

Two of the major features that are dependent on a new or significantly modified NCP are front-end processor support of PU2.1-based peer-to-peer communications and the ability to reconfigure SNA nodes without bringing the entire network down, according to IBM.

IBM also plans further enhancements to its 9370's communications architecture that will be designed to deal with current limitations on the number of 9370s that can be installed on the same SNA network, an IBM spokesman said.

Need modified version

"ACF/VTAM Version 3 Release 2 supports many of the announced June 16 features," the spokesman said. "But you do need a new NCP — or a modified version of a current NCP — to support PU2.1 and for dynamic network reconfiguration."

The updated NCP will be available in time for IBM to meet its announced third-quarter 1988 shipment deadline for these features, the spokesman added.

The yet-to-be-announced NCP, which IBM referred to as the "then current NCP" in its June announcement, will interact with IBM's Advanced Communications Function/VTAM Version 3 to allow PU2.1 devices to communicate through a front-end processor without the need for host intervention.

The IBM spokesman offered one caveat, which he said was not made clear during the initial announcement: "You do need to have an initial, one-time, 'it's going on' communication to the host, to let it know that contact through the front-end processor is happening." After that, the host stays out of the picture, he added.

Another rollout expected

Users can expect another round of IBM announcements aimed at making the 9370 better able to communicate as a departmental processor node rather than as a full-fledged mainframe taking up a full subarea of an SNA network, the spokesman indicated.

Currently, SNA protocols only allow up to 255 subarea addresses on any network system. This is a drawback for companies that want to set up communications between a thousand or more 9370s, as several of the largest 9370 buyers intend to do, the spokesman admitted.

"IBM recognizes the requirement of having multiple 9370 nodes beyond the current limit, and we have our best people working on it," he said.

The current upper limit imposed on the number of 9370s per SNA network is a concern for the state of New York's Department of Education, which is currently evaluating the 9370 as a departmental processor that would be installed in hundreds of school districts and library buildings.

The department is thinking of taking a "layered approach," according to Michael Radlick, director of planning and development. Multiple 9370s would report to any of nine data processing centers linked by a high-speed network backbone.

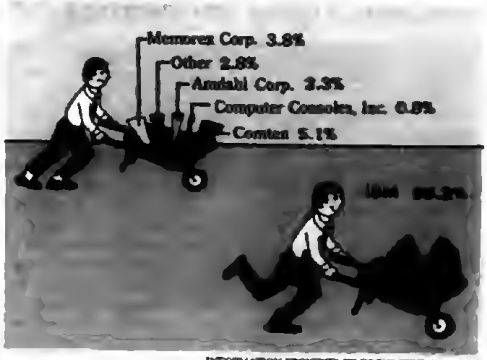
The problem is that some regions may have more than 255 9370s on their networks, he explained.

The department is eager for IBM to clarify the 9370's future role in light of "various pieces that are still floating around, like Enhanced Connectivity Facility, LU6.2, PU2.1 and Netview," Radlick said.

IBM still has not said whether it will implement PU2.1 support on the 9370.

Out in front

IBM dominates in June market share measurement of installed front-end processors of U.S. sites



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CW CHART: AMY J. SWANSON

IBM

FROM PAGE 1

keeping up with IBM's latest NCP features, according to Passmore. However, IBM has made it difficult for Amdahl to copy its high-end front-end processor, the 3725, by changing the microcode three times, he added. Communications processor vendors like Minneapolis-based NCR Comten and Netlink, Inc. in Raleigh, N.C., can offer greater networking flexibility and multivendor support than IBM because they are less firmly tied to the vendor's host environment, Passmore said. However, IBM's recent introductions threaten to eliminate some of those advantages.

Netlink spokesman Richard Buckle said, "What really affects us is the PU2.1 support on IBM's front-end processor, which will allow multiple [IBM] System/36s and their resources to talk to each other across an SNA network." This capability, which Netlink now offers, will not be available from IBM until a new NCP version arrives sometime late in 1988, Buckle said.

NCR Comten feels "hobbled by our need to conform to IBM's current NCP," said Eric Birkeland, the firm's director of product marketing. "Users have demanded dynamic reconfiguration from us, just as they have from IBM," but NCR Comten, like IBM, will not be able to offer this capability until the new NCP comes along. "Changing to a new NCP will be difficult for us and IBM," Birkeland noted.

At least one NCR Comten user has faith that the vendor will come through. "IBM is playing rough, but whatever they're doing, we're confident that Comten will make similar strides. They're very aggressive," said a data center manager at a major NCR Comten user site, who preferred not to be named. "We got Comten for the price breaks and because they were a forerunner in managing networks between front ends, independent of the host."

On the other hand, managers at two major IBM sites, Travelers Insurance Co. and Shearson Lehman Commercial Paper, Inc., said they would never consider bringing a third-party communications processor into their SNA networks. "We want to run the highest version of VTAM and NCP that we can get," said Trav Waltrip, Travelers' vice-president of data processing.

"Our network is very complex, and we need IBM's support," agreed Mervin Adrian, a manager for end-user computing at Shearson Lehman Commercial Paper. However, the company is keeping a close eye on SNA software vendors such as Communications Solutions, Cincom and micro-to-mainframe vendor Tangram Systems Corp. Adrian said he expects these companies to come out with connectivity tools and applications that could greatly ease his own burden when it comes time for his company to implement peer-to-peer SNA networking.

> "IBM IS playing rough, but whatever they're doing, we're confident that Comten will make similar strides. They're very aggressive."
>
> DATA CENTER MANAGER

Adrian said he expects those software vendors to be quick off the mark with applications and enhancements that will help companies like Shearson migrate to IBM's emerging peer-to-peer SNA architecture. "We are fairly Blue, but we have no problem with buying from a vendor that offers a significant price/performance differential or some important feature that IBM doesn't offer," he said.

Lotus/Intel/Microsoft EMS revision ready for display

BY ED SCANNELL
CW STAFF

PALO ALTO, Calif. — The first major revision of the Lotus/Intel/Microsoft Expanded Memory Specification (EMS) is set to be unveiled here this week, allowing users to access up to 32M bytes of expanded memory and providing several multitasking capabilities.

EMS Version 4.0 allows families of applications to use shared data in expanded memory, permits multiple spreadsheets to be linked and provides users with larger random-access memory (RAM) disks, print buffers and disk caches, an Intel Corp. spokesman said.

The previous EMS version, introduced in April 1985, was originally developed to allow use of memory beyond 640K bytes of RAM, which is the practical limit of Microsoft Corp.'s MS-DOS operating system.

In addition to Lotus Development Corp. and Microsoft, Ashton-Tate, Symantec Corp., Ansa Software and Quarterdeck Office Systems are expected to endorse the specification at its introduction this week.

Add-in memory boards that support Version 4.0 could be available before the end of the year, the spokesman said. Add-in boards designed to work with IBM's Personal Computer AT and compatibles will work with the revised specification but will require new device drivers.

Applications written for Version 3.2 are upwardly compatible with Version 4.0. However, software emulation packages supporting Version 3.2, such as Limulator, will not be supported by the upgrade. Version 4.0 also has several features for corporate and third-party developers that allow them to increase or shrink the amount of allocated expanded memory, do multiple page mapping, copy or exchange regions of conventional and expanded memory and map into memory more than 64K bytes at a time.

Version 4.0 is optimized to take advantage of some of the capabilities of the Intel 80386 processor. "The 386 machines have the ability to swap memory in the entire address space, so the spec [Version 4.0] now accommodates some of the things the 386 Lotus/Intel/Microsoft packages can do," a Lotus vice-president said. "So now, we can do some things in our applications that we couldn't do before."

While Version 4.0 offers users various multitasking capabilities, it does not allow multiple programs to be run concurrently without the presence of a multitasking operating system such as IBM and Microsoft's OS/2, as was speculated in recent published reports. However, some developers said they see it as an effective and more acceptable interim solution until OS/2 is delivered next year.

Desktop writer gets publishing slant

BY STEPHEN JONES
CW STAFF

MOUNTAIN VIEW, Calif. — With its sights set on an emerging market of occasional desktop publishing users, Software Publishing Corp. is scheduled to announce today a $249 package that merges word processing with low-end desktop publishing.

Software Publishing claimed its PFS:Professional Write Plus is the first product to combine word processing and desktop publishing programs that both feature what-you-see-is-what-you-get capabilities.

Unlike other desktop publishing packages that have to import word processor files, Software Publishing's package integrates both programs under a common main menu.

The merged product automates file handling and movement from the word processor to the publishing program. PFS:Professional Write Plus is scheduled to hit dealers' shelves by the first week of September.

The package combines the features of Software Publishing's $99 PFS:First Publisher with the vendor's $199 PFS:Professional Write and includes some file conversion utilities. Those products will continue to be sold individually. The new package requires 512K bytes of random-access memory and can output on Hewlett-Packard Co.'s Laserjet and Apple Computer, Inc.'s Laserwriter as well as 60 other dot matrix printers.

PFS:Professional Write Plus includes a print-smoothing feature that rounds off the jagged edges of dot matrix output. It also has a built-in dictionary, a thesaurus and an address book.

Software Publishing officials said PFS:Professional Write Plus was designed to tap into what many consider a huge market of business users who want slick-looking documents without taking the time to master such sophisticated high-end products as Aldus Corp.'s Pagemaker.

A gaggle of offerings

And Software Publishing is not alone. A gaggle of companies, including the following, are moving to seize a piece of the low-end desktop publishing pie:

- Ashton-Tate, which recently announced Byline, a $295 desktop publishing program for occasional users that is compatible with the company's Dbase III program.
- Digital Research, Inc., with its $395 Gem Desk Publisher, which is also aimed at professionals with no expertise in desktop publishing.
- International Microcomputer Software, Inc., a San Rafael, Calif., company that is expected next month to announce Page Perfect, a package that integrates desktop publishing with word processing in one file for occasional users.

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Computerworld (ISSN 0010-4841) is published weekly, except: January (5 issues), February (5 issues), March (6 issues), April (5 issues), May (5 issues), June (6 issues), July (5 issues), August (6 issues), September (6 issues), October (5 issues), November (7 issues), December (4 issues) and a single combined issue for the last week in December and the first week in January by CW Publishing/Inc., 375 Cochituate Road, Box 9171, Framingham, Mass. 01701-9171.
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INSIDE LINES

RISC-y business? Sources close to HP speculated last week that the announcement expected this week from the company would include some reduced instruction set computer-based, DOS-compatible computers. Reportedly on the way is a new Intel 80386-based machine and a transportable. According to sources close to the company, the 386 machine will be targeted at the NCR Tower line. It will be DOS compatible and will run Xenix with HP's compiler on it. Microsoft's Windows, or an HP version compatible with Version 2.0, will be included. The new unit will have 3½-in. disk drives built in, with an optional 5¼-in. external drive. The announcement is also intended to hit IBM and Compaq on the issue of price/performance, sources said.

When's the honeymoon? Bridge Communications is not letting upcoming nuptial plans with 3Com interfere with its September product introduction schedule. At the Federal Computer Conference next month, Bridge will unveil encryption products that conform to the Data Encryption Standard. Also next month, the company expects to unveil its first commercial implementation of the Open Systems Interconnect (OSI) standard. The product will be fully compatible with Technical Office Protocol, a subset of OSI, and incorporate the Virtual Terminal Protocol for workstation-to-host communications. A third Bridge introduction this fall will be a new version of Transmission Control Protocol/Internet Protocol with a number of added features, including a "much more user-friendly interface," Bridge said.

My word. Microsoft will announce this week a new version of its best-selling Word word processing program for IBM PCs and compatibles. Word 4.0 reportedly is significantly faster than Word 3.1 and contains a powerful macro system, sophisticated support for forms, a document conversion facility and the ability to switch back and forth between text and graphics from within the package. Sources said they expect the price to be the same as that for Version 3.1, $450.

Chipping away at Intel. Advanced Micro Devices (AMD) will begin production of its 32-bit microprocessor, the Am29000, in early 1988. Based on CMOS technology, the chip is promising speeds of 17 to 25 MIPS and represents what the company calls its "most ambitious effort to become a major player in high-performance microprocessing," a market that is currently dominated by Intel and Motorola. AMD also finalized its acquisition of Monolithic Memories, Inc. and named Monolithic President Anthony Holbrook to the AMD board.

ULSI you again . . . Now that everyone knows that LSI means large-scale integration and VLSI stands for very large-scale integration, it is natural that someone invented ULSI. No, ULSI isn't a cow. It stands for ultra large-scale integration, says IBM, which claimed last week to have developed silicon transistors that are 1,000 times thinner than a human hair. The circuits, measuring one-tenth of a micron wide, switch at 10 picoseconds, which is 10 times faster than those used today. Cooled to -321 degrees Fahrenheit, the circuits may have a future in PC-sized computers running complex applications like weather forecasting and continuous speech recognition.

Speak now, or forever hold your header field. The Copyright Office of the Library of Congress will hold a public hearing Sept. 9 in Washington, D.C., on the topic of computer screen displays. Specific areas to be addressed are whether the office should register any computer screen displays separately from the underlying computer programs that generate them and what the office should require for the deposit if any registration is made for the screen displays either separately or as part of a computer program.

Top gun or pop gun? DEC went one step further last week in its battle with the U.S. Air Force, lodging a formal complaint with the General Services Administration (GSA) on specifications for a pending $3.5-billion Air Force computer contract. The Air Force recently rejected DEC's request to drop the contract requirement for a specific version of Unix, AT&T's System V interface definition. The GSA appeals board will consider the DEC protest this week.

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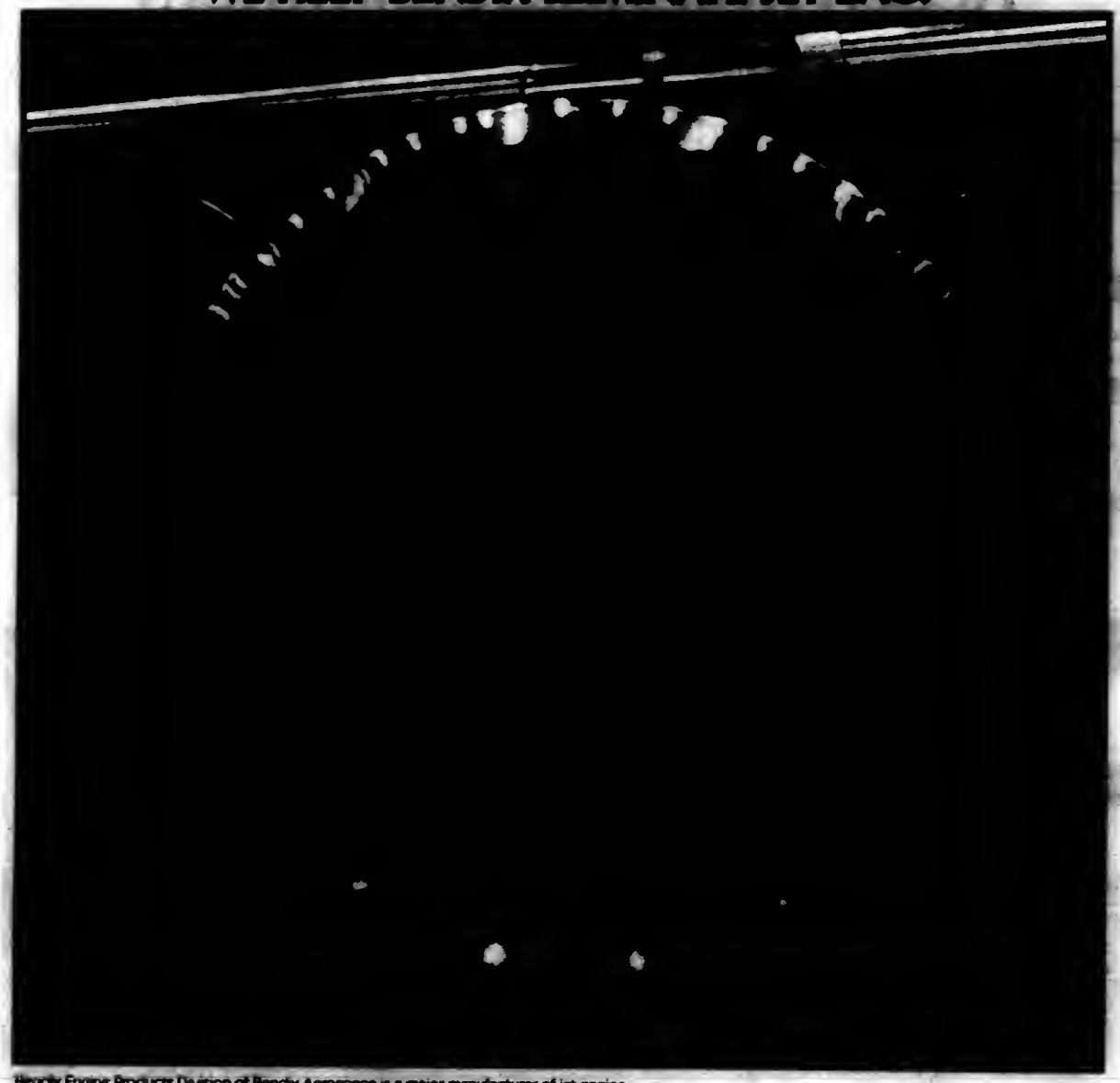

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